Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 27,5 b1
1. Edition

En

PE12P100 A 920/5 RS 90 RSUV 300-600 P8/322 R
Komb.-Nr. 0 401 870 039
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F12M716

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	600	16,0	without auxiliary spring	ca.34	300	8,0	580	0
	620	10,4			60	19-21	350	0
	635	6,0			300	7,7-8,3	320	1,2-1,8
	620	9,0-10,6			320	4,5-6,3		
	650	2,0-4,8			360	0 - 1,0		
(2a)	690	0-1,0	with auxiliary spring					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A1

AA

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 27,5 b
2. Edition
En

PE12 P 100/920/5 RS 90 RSUV 300-600 P8/322 R
Komb.-Nr. 0 401 870 023

supersedes 6.70
company KHD
engine F12 M 716

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	600	16,0	without auxiliary spring	ca 34	300	8,0	580	0
	620	10,4			60	19-21	350	0
	635	6,0			300	7,7-8,3	320	1,2-1,8
	620	9,0-10,6			320	4,5-6,3		
(2a)	650	2,0-4,8	with auxiliary spring		360	0 - 1,0		
	690	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40°C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 27,5 c

1. Edition

En

PE12P100/920/5 RS 90 RSUV 300-750P9/322 R

supersedes –

company KHD

engine F12 M716

Kont.-Nr. 0 401 870 024

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0	without auxiliary spring	ca. 31	300	8,0	730	0
	770	12,5					450	0
	800	6,2			50	19-21	340	1,2-1,8
	785	7,4-10,4			300	7,7-8,3		
	800	4,8-7,8			350	1,4-4,2		
(2a)	820	1,8-4,8	with auxiliary spring		400	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				–	–	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A3

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 27,5 c1
1. Edition

40

En

PE12 P100 A 920/5 RS 90 RSUV 300-750 P9/322 R

supersedes

Komb.-Nr. 0 401 870 034

company KHD

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

engine F12M716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tecfil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0	without auxiliary spring	ca.31	300	8,0	730	0
	770	12,5			50	19-21	450	0
	800	6,2			300	7,7-8,3	340	1,2-1,8
	785	7,4-10,4			350	1,4-4,2		
(2a)	800	4,8-7,8	with auxiliary spring		400	0 - 1,0		
	820	1,8-4,8						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A4

A4

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 27,5 e
1. Edition

En

PE12P110/920/5 RS 90 RSUV 300-750P9/322 R
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test tubing 1 680 750 060 Note VDT-I-401/ 103

supersedes
company KHD
engine BF12 M 716
Comb.-Nr. 0 401 870 026

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	18,8-19,6	0,8			
600	6,0	3,4-4,4				
600	12,0	18,2-19,5				
600	15,0	26,7-28,4				
200	6,0	0,9-1,9				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	750	16,0	without auxiliary spring	ca.31	300	8,0	730	0
	770	12,5			50	19-21	400	0
	800	6,2			300	7,7-8,3	320	1,2-1,8
	785	7,4-10,4			350	1,4-4,2		
(2a)	800	4,8-7,8			400	0 -1,0		
	820	1,8-4,8	with auxiliary spring					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 °C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limit: Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A5

A5

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 KHD 27,5 d

1. Edition

En

PE12P100/920/5 RS 90 RSUV 300-1000 P0/323 R
Komb.-Nr. 0 401 870 025
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75)

supersedes -
company KHD
engine F12M716

Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testcil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.56	1000	16,0	without auxiliary spring	ca.18	300	8,0	980	0
	1030	10,8			50	19-21	430	0
	1055	6,0			300	7,7-8,3	340	1,2-1,8
	1030	10,0-12,0			350	4,4-6,0		
(2a)	1055	3,8-6,0			500	0 - 1,0		
	1200	0 - 1,0	with auxiliary spring					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 27,5 d1
1. Edition

En

supersedes
company KHD
engine F12M716

PE12P 100 A 920/5 RS 90 RSUV 300-1000 PO/323 R
Komb.-Nr. 0 401 870 035
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.56	1000 16,0 1030 10,8 1055 6,0		without auxiliary spring			ca.18	300	8,0	980	0
							50	19-21	430	0
							300	7,7-8,3	340	1,2-1,8
							350	4,4-6,0		
(2a)	1030 10,0-12,0 1055 3,8-6,0 1200 0- 1,0		with auxiliary spring				500	0 -1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40°C (104 F)		(6) Rotational speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Take from VDT-I-401/103								

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

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Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 27,5 f
1. Edition

En

PE12P100/920/5 RS 90 RSU 300/1000 PO/331 R

supersedes
company KHD
engine FR M 716

omb.-Nr. 0 401 870 028
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.68	1000	15,8-16,2	-	-	-	ca.34	300	7,3	980	0
	1050	8,8-10,2								
	1100	3,4-5,2					100	19-21	500	0
							200	10,0-15,0	300	1,7-2,3
	1150	0,9-3,0					300	7,0-7,6		
(2a)	1200	0 - 2,0					350	4,0-5,4		
							450	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/	103			-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A8

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Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 27,5 f1
1. Edition

En

PE12P100A 920/5 RS 90 RSU 300/1000 PO/331 R
Komb.-Nr. 0 401 870 036
1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)
Note VDT-I-401/ 103

supersedes -
company KHD
engine F12M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	1000	15,8-16,2	-	-	-	ca.34	300	7,3	980	0
	1050	8,8-10,2					100	19-21	500	0
	1100	3,4-5,2					200	10,0-15,0	300	1,7-2,3
							300	7,0-7,6		
(2a)	1150	0,9-3,0					350	4,0-5,4		
	1200	0 -2,0					450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/	103			-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 9,2 b

1. Edition

En

PE 4 P 100/420 LS 99 RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 874 022

Note VDT-I-401/ 103

supersedes –

company KHD

engine F 4 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tastoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					450	0
	1080	4,0			100	19-21	340	1,2-1,8
					300	5,7-6,3		
	1050	7,0-10,0			350	3,2-4,5		
(2a)	1100	1,5-3,8	with auxiliary spring		450	0-1,0		
	1180	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	From VDT-I-401/103				–	–	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 9,2 b 1

1. Edition

En

PE 4 P 100 A 420 LS 99 RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 874 023

Note VDT-I-401/ 103

supersedes
company KHD
engine F 4 M 716

Testoil SAE 10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,7				

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					450	0
	1080	4,0			100	19-21	340	1,2-1,8
	1050	7,0-10,0			300	5,7-6,3		
	1100	1,5-3,8			350	3,2-4,5		
(2a)	1180	0-1,0	with auxiliary spring		450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A11

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 9,2 a

1. Edition

En

PE 4 P 100/420 LS 99 RSV 250-1000 P 7/312 R

Komb.-Nr. 0 401 874 021

Note VDT-I-401/ 103

supersedes –

company KHD

engine F 4 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Teststand 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					450	0
	1080	4,0			100	19-21	340	1,2-1,8
	1050	7,0-10,0			300	5,7-6,3		
	1100	1,5-3,8			350	3,2-4,5		
(2a)	1180	0-1,0	with auxiliary spring		450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take from VDT-I-401/103					-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A12

A12

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 18,3 f

1. Edition

En

PE 6 P 100/420 LS 111 RSV 250-1000 P 7/317 R

Komb.-Nr. 0 401 876 061

Note VDT-I-401/ 103

supersedes

company KHD

engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

Tested SO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					450	0
	1080	4,0			100	19-21	340	1,2-1,8
	1050	7,0-10,0			300	5,7-6,3		
	1100	1,5-3,8			350	3,2-4,5		
(2a)	1180	0-1,0	with auxiliary spring		450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40° C (104° F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A13

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 18,3 f 1

1. Edition

En

PE 6 P 100 A 420 LS 111 RSV 250-1000 P 7/317 R

Komb.-Nr. 0 401 876 139

Note VDT-I-401/ 103

supersedes

company KHD

engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					450	0
	1080	4,0			100	19-21	340	1,2-1,8
	1050	7,0-10,0			300	5,7-6,3		
	1100	1,5-3,8			350	3,2-4,5		
(2a)	1180	0-1,0	with auxiliary spring		450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A14

A14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 18,3 g

1. Edition

En

PE 6 P 100/420 LS 111 RSV 250-1000 P 7/361 DR

Komb.-Nr. 0 401 876 132

Note VDT-I-401/ 103

supersedes company KHD engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (to-que-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0					630	0,9-1,1
	1080	4,0			100	19-21	340	0,9-1,1
	1050	7,0-10,0			300	5,7-6,3		
	1100	1,5-3,8			350	3,2-4,5		
(2a)	1180	0-1,0	with auxiliary spring		450	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A15

A05

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 18,3 g 1

1. Edition

En

PE 6 P 100 A 420 LS 111 RSV 250-1000 P 7/361 DR

Komb.-Nr. 0 401 876 133

Note VDT-I-401/ 103

supersedes
company KHD
engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tesoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1000 16,0 1050 9,0 1080 4,0		without auxiliary spring			ca. 28	300	6,0	980 630 340	0 0,9-1,1 0,9-1,1
							100 300 350 450	19-21 5,7-6,3 3,2-4,5 0-1,0		
(2a)	1050 7,0-10,0 1100 1,5-3,8 1180 0-1,0		with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40° C (104° F)		(6) Rotational-speed limitat	(3a) Fuel delivery charactenstics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A16

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 FIA 13,8 a 5
1. Edition
En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 703
Komb.-Nr. 0 401 846 496
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company Fiat
engine 8210.02
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95 - 2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1±0,1	17,0 - 17,3	0,5 (0,8			
225	7,5-7,7	1,7 - 2,3	0,8 (1,2			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
550	15,6 - 16,4	550	16,0	10,1	1145-1160	225	7,6	100	min.9,1	1100	11,1-11,2
				4,0	1185-1215			225	7,5-7,7	550	11,1-11,3
				1350	0,1,0			365	-405 = 2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1145 -1160 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	-	-

Checking values in brackets

7.84

A17

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 11,8 b 1
2. Edition

En

PE 6 P 110/720 RS 176 RSV 300-1100 P 1/303 R
Komb.-Nr. 0 401 876 110

supersedes 7.78
company Daimler-Benz
engine OM 355
Schmitt Schneefräse

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	13,5-13,7	0,4 (0,8)			
300	7,5-7,7	1,2-1,8	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
max.	800	0,3-1,0	-	-	-	ca.21	300	7,1		
	x = 4,75						300	7,5-7,7		
ca. 56 (2a)	11,7	1140-1150					495-555	= 2,0		
	4,0	1235-1255								
	1260	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limiter, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (132,0-140,0)	1140-1150*	-	-	100	170,0-190,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MB 11,8 b 2
1. Edition
En

PE 6 P 110/720 RS 176 EP/RSV 350-750 P 4/397 R

supersedes
company Daimler-Benz
engine OM 355
Generator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	11,3-12,3	0,4			
600	9,0	4,3-5,5				
600	15,0	15,5-17,2				
200	9,0	2,6-3,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 44	750	16,0	without auxiliary spring	ca. 23	350	6,0		**
	800	8,6			200	19,0-21,0		
	825	4,0			350	5,9-6,1		
					400	0 - 1,0		
ca. 42 (2a)	750	ca. 11,0	without auxiliary spring					
	765	ca. 3,8						
	840	0,1-1,0						

The numbers denote the sequence of the tests

Set idle -speed auxiliary spring at 2.0 mm control-rod travel then 1/2 turn back.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
730	135,0-138,0	750-760*	780-800	= 3,8 mm RW	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A19

A19

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 STE 8,1 a 1

1. Edition

En

PE 6 P 110 A 721 RS 195 Z RQV 250-1300 PA 257 DR

Komb.-Nr. 0 401 856 121

supersedes

company Steyr

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	9,8-10,5	0,5			
600	9,0	3,2-4,2				
600	12,0	8,2-9,4				
600	15,0	13,7-15,3				
200	9,0	1,1-2,1				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 50	1340	14,4-17,2	-	-	-	ca. 13	150	10,0-11,0	250	0,1-0,6
	1400	8,5-13,2					250	8,0-10,7	600	3,8-4,1
	1450	2,9-9,7					350	4,6-7,8	950	5,2-5,6
	1500	0-5,8					450	0,4-3,4	1300	8,0
	1570	0					510	0		

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,6 bar	1330-1350*	LDA	0,6 bar	100	120,0-140,0	1300	0
1300	117,0-119,0		900	115,0-118,0			1100	0,1-0,2
	(115,0-121,0)			(114,0-119,0)			850	0,4-0,5
LDA	0 bar		700	114,0-118,0				
1300	113,0-115,0			(113,0-119,0)				
	(111,0-117,0)		500	104,0-110,0				
				(103,0-111,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A20

A20

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE6P..RS195Z + RQV..PA257DR	0,30	0,46	Start End

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 t
2. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 249 Z
Komb.-Nr. 0 [illegible] 966 103

RQV 300-1000 PA 204/4 R

supersedes 81
company Fiat
engine 8217.12.024

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,5+0,1	18,7 - 19,1	0,5(0,9)			
300	5,9-6,1	2,2 - 2,8	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	ca.14	100	min.9,0	275	1,5-1,7
							300	5,9-6,1	450	3,6-4,2
ca.9	9,5	1040-1050							800	6,4-6,6
	4,0	1135-1165							1000	7,9
	1300	0 - 1,0				300-395 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	187,0-191,0 (184,0-194,0)	1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

A22

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A22

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 t 1
1. Edition

En

PES 6 P 120 A 820 LS 249-1 RQV 300-750 PA 204
Komb.-Nr. 0 402 046 230

supersedes –
company Fiat
engine 8 217.32.112
147 kW (200 PS)

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95 - 2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,7-9,8	14,9 - 15,3	0,5 (0,9)			
300	5,9-6,1	1,8 - 2,4	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	800	15,2-17,8	-	-	-	ca.11	100	min.7,5	250	0 - 0,5
ca. 53	8,7 4,0 900	770 - 775 790 - 800 0-1,0				(3a)	300 645	5,9-6,1	- 630 750	2,4-2,6 5,8

Torque control travel s = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	149,0-153,0 (146,0-155,0)	770 - 775*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

A23

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A23

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 10,0 a
1. Edition

En

PE 5 P 100 A 720 RS 265 RQ 250/1100 PA 269R
Komb.-Nr. 9 400 087 240

supersedes -
company Mercedes-Benz Brasil
engine O M 355-5

1 - 2 - 4 - 5 - 3 je 72° ± 0,5° (± 0,75°)

Test-SO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0±0,1	11,9 - 12,1	0,3 (0,6)			
250	7,4-7,6	1,7- 2,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	12,0 4,0 1350	1125-1145 1195-1230 0-1,0	250	6,0	100 250 385	min. 7,5 5,9-6,1 425=2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1125-1145 min -1, 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever: Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	113,5-120,5 (116,5-122,5)	450	450	101,0 - 105,0 (99,0 - 107,0)	100	140,0 - 160,0

Checking values in brackets

7.84

A24

A24

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 PEN 7,0 b 2
2. Edition

En

PE 6 P 110 A 320 RS 260 W RSV 250-1250 PO/374-2 R supersedes 9.83

Komb.-Nr. 0 401 876 272 company Volvo-Penta

engine TAMD 70 E
228 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testronic 113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1+0,1	14,1-14,3	0,4(0,75)			
250	6,1-6,3	1,1-1,5	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.20	250	5,7	-	-
	X = 2,0						250	6,1-6,3		
ca.51 (2a)	11,1	1290-1300					460-520	= 2,0		
	4,0	1390-1420								
	510	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,9 bar 141,0-143,0 (138,0-146,0)	1290-1300*	LDA 700	0 bar 85,0-88,0 (82,0-91,0)	100	170,0-210,0 =20,0 - 21,0 mm RW	-	-
					250	11,0-15,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B1

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 260 W	0,90	0	12,1-12,2
		0,59	9,0-9,1
+RSV..PO/374-2R		0,30	11,3-11,4
			9,7-9,9

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B2

02

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 d 1

1. Edition

En

PE 6 P 110 A 320 RS 272 RQV 250-1250 PA 235-2 R

Komb.-Nr.0 401 846 298

supersedes

company Volvo

engine TD 70 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC); RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,7-8,8	9,2-9,4	0,4(0,8)			2,5±0,1
250	6,7-6,9	2,2-2,6	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.12	100	min.8,2	200	0,3-0,8
							250	6,7-6,9	550	2,6-3,2
ca. 44	7,7	1290-1300					350-410	=2,0	900	4,6-5,0
	4,0	1340-1370							250	7,5
	1450	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA	0 bar	100	140,0-180,0	-	-
700	92,0-94,0		700	70,5-73,5		(136,0-184,0)		
	(89,0-97,0)			(67,5-76,5)		=20,0-21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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B3

B3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P.. RS 272 +RQV.. PA 235-2 R	0,70	0 0,31 0,23	8,7-8,8 7,8-7,9 8,5-8,6 7,9-8,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B4

Test Specifications Fuel Injection Pumps and Governors

① VPP 001/4 MB 11,8h

3. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 720 RS 279 — PDV 300-1100 PA 550

Komb.-Nr. 0 401 846 442

superseded B.83

company Daimler Benz

engine OM 355
177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC) PLW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7	11,7 - 11,9	0,3(0,5)			
	+0,1					
300	8,0-8,2	1,5 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.12	100	min.9,5	300	1,4-1,5
							300	8,0-8,2	450	2,7-3,0
ca. 65	11,7	1140-1150							1150	8,7
	4,0	1235-1265								
	1350	0 - 1,0				330-430 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1100	117,0-119,0 (115,0-121,0)	1140-1150*	-	-	100	140,0-160,0 (136,0-164,0)	-	-
						100-220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

B5

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B5

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ROL 16,2 b

1. Edition

En

PE 8 P 110 A 920/4 RS 290 RQV 350/575-750 PA 273 R

Komb.-Nr. 0 401 848 044

1-6-2-5-8-3-7-4 je 45° ± 0,5° (± 0,75°)

supersedes

company Rolls Royce

engine C 8 T

Test in ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,7+0,1	17,6-17,9	0,4(0,75)			
350	7,0-7,2	1,8-2,2	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	12,7 4,0 950	750-755 790-800 0-1,0	-	-	-	ca. 15 (3a)	100 350 580-640=2,0	min. 8,5 7,0-7,2	320 400 - 500 650 750	0,5-1,7 1,9-2,1 4,6-5,2 8,3

Torque control travel s = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
700	176,0-179,0 (173,5-181,5)	750-755 *	-	-	100	210,0-230,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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B6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 s
2. Edition

En

PES 6 P 110 A 720 LS 295 RQV 250-1100 PA 373 DR
Komb.-Nr. 0 402 046 170

supersedes 10.83
company MAN
engine D 2566 MT
206 kW/2200 min^{-1}
MAN-Nr. 1-7961

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5-14,8	0,4(0,8)			
250	6,8-7,0	1,2-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑫ ⑫a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min.8,5	200	0,6-0,8
							250	6,8-7,0	500	3,9-4,1
ca.67	11,1	1140-1150					520-	580=2,0	800	5,5-5,7
	4,0	1280-1310							1100	8,1
	1400	0 - 1,0								
						③a				

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑫b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 145,0-148,0 (142,5-150,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0	100	215,0-235,0 (211,0-239,0	1100	12,1+0,1
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,0-116,0			700	12,8+0,1
							850	12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

B7

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B7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 295 + RQV..PA 373 DR	0,50	0 0,20 0,32	12,8 - 12,9 10,9 - 11,0 11,5 - 11,6 12,2 - 12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B8

B8
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 s 1
2. Edition
En

PES 6 P 110 A 720 LS 295 RQV 250-1100 PA 421 DR
Komb.-Nr. 0 402 046 174

supersedes 10.83
company: MAN
engine: D 2566 MTSF
206 kW/2200 min^{-1}
MAN-Nr. 1-7968

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5-14,8	0,4(0,8)			
250	6,9-7,1	1,2-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 16	100	min.8,5	200	0,6-0,8
							250	6,9-7,1	500	3,9-4,1
ca.68	11,1	1140-1150					520-580	=2,0	800	5,5-5,7
	4,0	1245-1275							1100	8,1
	1400	0 - 1,0				(3a)				

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,2 bar	100	215,0-235,0	1100	12,1+0,1
1100	145,0-148,0		500	123,0-127,0		(211,0-239,0)	700	12,8+0,1
	(142,5-150,5)			(120,0-130,0)			850	12,3+0,2
LDA	0,7 bar		LDA	0 bar				
700	157,0-161,0		500	110,0-113,0				
	(154,0-164,0)			(107,0-116,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

B9

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 295 + RQV..PA 421 DR	0,50	0 0,20 0,32	12,8 -12,9 10,9 - 11,0 11,5 - 11,6 12,2 - 12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

B10

B10

En

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 I 8
2. Edition
En

PES 6 P 110 A 720 LS 295 RQ 250/1100 PA 422 DR
Komb.-Nr. 0 402 046 173

supersedes 10.83
company MAN
engine D 2566 MTSF
206 kW/2200 min^{-1}
MAN-Nr. 1-7963

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,5 - 14,8	0,4(0,8)			
250	6,8-7,0	1,2 - 1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,1	1145-1160	250	6,9	100	min.8,5	1100	12,1-12,2
VH = max. 46°				4,0	1200-1230			250	6,8-7,0	1000	12,3-12,5
				1350	0 - 1,0			370-	410=2,0	800	12,6-12,8
										700	12,8-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	Control rod travel cm^3/1000 strokes / mm 7
LDA 1100	0,7 bar 145,0-148,0 (142,5-150,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-235,0 (211,0-239,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,0-116,0)		

Checking values in brackets

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)
PES 6 P..LS 295 + RQ..PA 422 DR	0,50	0 0,20 0,32	12,8 - 12,9 10,9 - 11,0 11,5 - 11,6 12,2 - 12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 BET 12,0 a 1

1. Edition

En

PE 6 P 110 A 320 RS 350 RSV 300-1100 P 1/815 DR

Komb.-Nr. 0 401 876 210

supersedes
company Berliet
engine MDS 063540 T
256 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3-1,4 (1,25-1,45) mm (from BDC) Zyl. 3

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	14,5-14,8	0,4(0,8)			
300	6,8-7,0	0,7-1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 60	1085	16,0		ca. 27	300	6,4	1100	11,7-11,8
	1140	10,2	without auxiliary spring		100	min.19,0	900	12,9-13,1
	1180	5,0			300	6,8-7,0	650	13,3-13,4
	1145	10,7			520-580	=2,0		
(2a)	1200	ca. 4,0			600	0-1,0		
	1300	0,3-1,7	with auxiliary spring					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 145,0-147,5 (142,0-150,5)	1140-1150*	LDA 650	0,7 bar 174,0-179,0 (171,0-182,0)	100	160,0-180,0	300	6,9
LDA 900	0,7 bar 165,0-171,5 (162,0-174,5)		LDA 350	0 bar 109,0-113,0 (106,0-116,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

B13

B13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P.. RS 350 + RSV.. P1/815 DR	0,68	0,42 0,22 0	13,4-13,5 12,6-12,7 11,6-11,9 11,1-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 BET 12,0 b
1. Edition
En

PE 6 P 110 A 320 RS 350 RSV 300-1100 P 1/816 DR
Komb.-Nr. 0 401 876 211

supersedes -
company Berliet
engine MDS 063540
206 kW

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3-1,4 (1,25-1,45) mm (from BDC); RW=9,0-12,0 mm - Zyl. 3

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	16,7-16,9	0,4 (0,75)			
300	6,8-7,0	0,9-1,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	6,4	1100	12,7-12,8
	x = 4,5						300	6,8-7,0	1000	12,9-13,1
							480-540	=2,0	700	13,5-13,7
ca. 59 (2a)	11,7	1140-1150								
	4,0	1200-1230								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 166,5-168,5 (164,0-171,0)	1140-1150*	LDA 650	0,7 bar 180,0-185,0 (177,0-188,0)	100	160,0-180,0 (156,0-184,0)	300	6,9
			LDA 350	0 bar 109,0-113,0 (106,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P.. RS 350 +RSV.. P1/816 DR	0,70	0 0,38 0,22	13,5-13,7 10,7-10,8 12,8 12,9 11,4-11,7

Notes

(1) when n rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4MB11, 4b
5. Edition

En

Testoil-ISO 4113

PES 6 P 100 A 820 LS 3517
..LS 3519

RQ 300/1100 PA327R (1)
PA327R (2)

supersedes 10.83
company Daimler-Benz
engine: OM 407
147kW (200PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,13) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 1 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 2 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,8-11,9	10,2 - 10,4	0,3(0,6)	11,7-11,8	9,9 - 10,1	
300	8,0-8,2	0,6 - 1,2	0,3(0,5)	7,5-7,7	0,5 - 1,1	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

327R mit Z

Checking of slider PRG check (1) rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications (4) Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications (5) rev/min 9	Control rod travel mm 10	Torque control (3) rev/min 11	Control rod travel mm 12
500	13,8-14,6	500	14,2	10,8	1145-1160	300	7,6	100	min.9,6	-	-
				4,0	1200-1230			300	7,5-7,7		
				13,0	0 - 1,0			370-410	=2,0		

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop (3a) rev/min 3	Fuel delivery characteristics (3b) rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed (6) rev/min 6	Control rod travel mm 7
"Z" 1100	102,0 - 104,0 (100,0 - 106,0)	500	-	-	100	145,0-165,0 (141,0-169,0)

Checking values in brackets

7.84

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	13,8-14,6	500	14,2	10,7 4,0 1350	1145-1160 1200-1230 0 - 1,0	300	7,6	100 300 370-	min.9,6 7,5-7,7 410=2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1145-1160 min-1 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
"y" 1100	99,0 - 101,0 (97,0 - 103,0)	500	-	-	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

En Checking values in brackets

B18

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c 1

2. Edition

En

PE 6 P 120 A 321 RS 359-1 RQV 275-1200 PA 648
Komb.-Nr. 0 401 856 154
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.83
company: RVI
engine MID 06 20 30
141 kW

Testbuch 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,7+0,1	12,7-12,9	0,5(0,9)			
275	5,6-5,8	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 10	200	min.8,2	275	1,3-1,4
							275	5,6-5,8	450	8,3-3,9
ca. 65	9,7	1245-1255							800	5,7-5,9
	4,0	1335-1365				275-365			1200	8,3
	1450	0-1,0								
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	127,0-129,0 (124,0-132,0)	1245-1255	-	-	100	155,0-175,0 (151,0-179,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PEN 7,0 k

1. Edition

En

PE 6 P 110 A 320 RS 367 Z
Komb.-Nr. 0 401 846 456

RQV 250-1000 PA 394

supersedes

company Volvo-Penta
engine MD 70 C-C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test on ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	8,9-9,0	7,0-7,2	0,4(0,75)			2,5 ± 0,1
250	5,3-5,5	1,6-2,0	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 10	100	min.6,8	200	0,7-0,9
ca. 66	7,9	1050-1060					250	5,3-5,5	470	3,2-3,7
	4,0	1110-1130				250-400			730	5,2-5,5
	1250	0-1,0							1000	7,9
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 70,0-72,0 (67,0-75,0)	1050-1060*	-	-	100	165,0-200,0 (161,0-204,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

B20

B10

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

PE 6 P 110 A 721 RS 369 RQ 300/1300 PA 412 DR

Komb.-Nr. 0 401 856 142

supersedes 7.83
company Steyr
engine WD 615.60

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,75-2,85 (2,70-2,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,5+0,1	11,7-11,9	0,4(0,75)			
250	9,0-9,2	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,5 4,0 1550	1345-1360 1405-1435 0 - 1,0	300	6,0	100 300 390-430	min. 7,4 5,9-6,1 = 2,0	1300 700 900 1100	12,5-12,6 12,8-12,9 12,6-12,8 12,6-12,7

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1345-1360 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1300	0,7 bar 117,0-119,0 (114,0-122,0)	-	LDA 700 LDA	0,7 bar 107,0-111,0 (104,0-114,0) 0 bar 100,0-102,0 (97,0-105,0)	100	115,0-135,0

Checking values in brackets

5.84

B21

B2A

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6P.. RS 369 +RQ .. PA 412 DR	0,70	0 0,31 0,27	12,8-12,9 12,5-12,6 12,7-12,8 12,6-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 STE 10,0 b 1
1. Edition

En

PE 6 P 110 A 721 RS 369
Komb.-Nr. 0 401 856 143

RQV 250-1300 PA 413 DR

supersedes -
company Steyr
engine WDWD 615,60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,6+0,1	11,5-11,7	0,4(0,75)			
250	9,3-9,5	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min10,5	200	0,6-0,8
							250	9,3-9,5	560	3,4-4,1
ca. 47	11,6	1340-1350					420-480	= 2,0	930	5,6-6,0
	4,0	1450-1480							1300	8,3
	1550	0 - 10				(3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 115,0-117,0 (112,0-120,0)	1340-1350*	LDA 700	0,7 bar 108,0-111,0 (105,0-114,0)	100	120,0-130,0	1300	12,6+0,1
							700	13,0+0,1
							1000	12,9+0,1
							1150	12,7+0,1
			LDA 700	0 bar 102,0-104,0 (99,0-107,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

B23

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

B23

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting		Measurement		Control rod travel		diminution difference
	Gauge pressure	bar	Gauge pressure	bar	mm	(1)	
PE6P..RS 369 +RQV .. PA 413 DR	0,70		0 0,35 0,33		13,0-13,1 12,7-12,8 12,9-13,0 12,8-12,9		

Notes

(1) when n rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,8 i
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 720 RS 371 RQV 300-1100 PA 568
Komb.-Nr. 0 401 846 450
1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ±0,5° (±0,75°)

supersedes 2.82
company Daimler Benz
engine OM 355 A
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	16,0 - 16,2	0,4(0,8)			
300	6,1-6,3	1,3 - 1,9	0,4(0,7)			
600 500	---	c, Sp. 4 u.5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 16	100	min. 8,0	250	1,0-2,0
							300	6,2-6,4	540	4,4-4,6
									820	5,9-6,2
									1100	8,4
ca. 66	10,7	1140-1150				275-330 (3a)				
	4,0	1215-1245								
	1350	0 - 1,5								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 160,0-162,0 (157,0-165,0)	1140-1150*	LDA 600	0,7 bar 155,0-159,0 (152,0-162,0)	100	140,0-160,0 136,0-164,0	-	-
			LDA 500	0 bar 134,0-136,0 (131,0-139,0)		100-220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

CA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure MB 11.8i

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
371 with 568	0,7 bar	0,39	11,7 - 11,8 11,5 - 11,6
		0,35	11,2 - 11,3
		0	11,0 - 11,1

Testoil-ISO 4113

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 i
5. Edition
En

PE 6 P 110 A 320 RS 372 RSV 250-1100 P 5/458 R

Komb.-Nr. 0 401 876 235

Note VDT-I-420/114

superseded 10.82
company DAF
engine DKTD 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

testen150 1113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,6-13,9	0,4 (0,75)			
250	6,6-6,8	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,2-12,3
	x = 3,5						250	6,6-6,8	300	12,4-12,9
ca. 51 (2a)	11,0	1140-1150					640-700	= 2,0		
	4,0	1275-1305								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 135,5-138,5 (133,0-141,0)	1140-1150 *	LDA 600	0 bar 126,0-129,0 (123,5-131,5)	100	244,0-285 (240,0-289,0) = 19,5 - 21,0 mm RW	0 250	6,7

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

C3

C3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P.. RS 372 + RSV.. P5/458 R	0,70	0 0,30 0,26	12,0-12,1 11,4-11,5 11,8-11,9 11,5-11,7

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C4

En C V

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 k
5. Edition
En

PE 6 P 120 A 320 RS 372 RSV 250-1100 P5/458R
Komb.-Nr. 0 401 876 229
Note VDT-I-420/114

supersedes 10.82
company: DAF
engine: DKS 1160
235 kW (320 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,1 - 19,5	0,5 (0,9			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,
	x =	5,0							300	11,3+0,
							250	6,2-6,4		
(5) ca. 54	9,9	1140-1150					620-	680 = 2,0		
	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 191,0-195,0 (188,0-198,0)	1140-1150*	LDA 600	0 bar 135,0-137,0 (132,0-140,0)	100	315,0-355,0 (311,0-359,0) = 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

C5

BOSCH
Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung
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C5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P120..RS 372 with.. P5/458R	0,36		10,6 - 10,7
		0,70	10,9 - 11,0
		0	9,8 - 9,9
		0,28	10,0 - 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 320 RS 372-1 RQ 250/1100 PA 417 R
Komb.-Nr. 0 401 846 464

supersedes
company: DAF
engine: DKS 1160
235 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,3-19,7	0,5(0,9)			
250	6,2-6,4	1,1-1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider VRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,9 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,3	100 250 445-485	min.7,4 6,2-6,4 = 2,0	850 1100	10,9-11,0 10,8-11,0

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation. At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 850	0,7 bar 193,0-197,0 (190,0-200,0)	-	LDA 600	0 bar 133,5-137,5 (130,5-140,5)	100	320,0-360,0 (316,0-364,0) = 19,5-21,0 mm RW

Checking values in brackets

5.84

C7

D. Adjustment Test for Manifold Pressure Compensator

Test at n 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 372-1 + RQ..PA 417 R	0,70	0 0,30 0,26	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C8

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 11,6 i 8
3. Edition

En

PE 6 P 110 A 320 RS 372-1 RQ 250/1100 PA 417-1
Komb.-Nr. 0 401 846 463 RQ 250/1100 PA 417

supersedes 3.83
company: DAF
engine: DKTD 1160
191 kW (260 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7-14,0	0,4(0,75)			
250	6,6-6,8	0,7-1,1	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,0 4,0 1350	1145-1160 1220-1250 0 - 1,0	250	6,7	100 250 460-500	min. 7,8 6,6-6,8 = 2,0	850 100	12,0-12,1 11,9-12,1

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 850	0,7 bar 136,5-139,5 (134,0-142,0)	-	LDA 600	0 bar 127,5-130,5 (125,0-133,0)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

5.84

C9

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i 8

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS372-1 +..PA17-1 / ..PA 417	0,70	0 0,30 0,26	12,0 - 12,1 11,4 - 11,5 11,8 - 11,9 11,5 - 11,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 k 5
1. Edition

En

PE6P120A 320 RS 372-1 RQ 250/1000 PA 417-3

supersedes –
company DAF
engine DKSB 215 kW

Komb-Nr. 0 401 846 503
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,2+0,1	17,9-18,1	0,5(0,9)			
250	6,6-6,8	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	10,2	1035-1050	250	6,3	100	min.7,4	850	11,4-11,5
				4,0	1095-1125			250	6,2-6,4	1000	11,3-11,5
				1250	0-1,0			445-485	=2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1035-1050 min^{-1}

↑ mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,7 bar 179,0-181,0 (176,0-184,0)	–	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100	305,0-345,0 (301,0-349,0)
					250	6,2-6,4 mm RW

Checking values in brackets

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 372-1 +RQ..PA 417-3	0,70	0 0,33 0,27	11,2-11,3 10,0-10,1 10,9-11,0 10,2-10,4

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

C12

En C12

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6k3
3. Edition

En

PE 6 P 110 A 320 RS 372-1 RSV 250-1100 P5/458 R
P5/458-1
Komb.-Nr. 0 401 876 254

supersedes 7.83
company DAF
engine DKTD 1160
191 kW (260 PS)

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testbench 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7 - 14,0	0,4 (0,75)			
250	6,6-6,8	0,7 - 1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,2+0,1
	x =	4,25					250	6,6-6,8	300	12,4+0,5
ca. 51	11,0	1140-1150					640-700	= 2,0		
(2a)	4,0	1275-1305								
	1425	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 137,0-140,0 (134,5-142,5)	1140-1150*	LDA 600	0 bar 127,5-130,5 (124,5-133,5)	100	245,0-285,0 (241,0-289,0) = 19,5 - 21,0 mm RW	0 250	6,7

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 372-1	0,30		11,8 - 11,9
+ .. P5/458		0,70	12,0 - 12,1
/ .. P5/458-1		0	11,4 - 11,5
		0,26	11,5 - 11,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 k 4
2. Edition

En

PE 6 P 120 A 320 RS 372-1 RSV 250-1100 P5/458 R

supersedes 11.82
company DAF
engine DKS 1160
235 kW

Komb.-Nr. 0 401 876 255

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	19,3-19,7	0,5 (0,9)			
250	6,2-6,4	1,1-1,5	0,65 (0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,1
	X = 5,0						250	6,2-6,4	300	11,3+0,5
ca.54 (2a)	9,9	1140-1150					620-680	= 2,0		
	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 193,0-197,0 (190,0-200,0)	1140-1150*	LDA 600	0 bar 133,5-137,5 (130,0-141,0)	100	320,0-360,0 (316,0-364,0) = 19,5 - 21,0 mm RW	250	6,3

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C15

C15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS372-1	0,36		10,6 - 10,7
+ ..P5/458R		0,70	10,9 - 11,0
		0	9,8 - 9,9
		0,28	10,0 - 10,4

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 k 2
4. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R

supersedes 2.84
company DAF
engine DKX 1160
243 kW
Komb.-Nr. 0 401 876 261

Note VDT-I-420/114
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 5,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7
							250	6,4-6,6	300	11,8-12,3
ca. 54 (2a)	10,4	1140-1150					670-730	= 2,0		
	4,0	1270-1300								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm RW	250	6,5

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 1
4. Edition

En

PES 6 P 110 A 720 LS 375 RQV 250-1100 PA 373 DR
Komb.-Nr. 0 402 046 180

supersedes 10.83
company MAN
engine D 2566 MTF
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 13	100	min.8,9	325	1,7-2,2
							250	7,3-7,5	900	6,2-6,4
ca.65	11,4	1140-1150					520-	580=2,0	1100	8,0-8,2
	4,0	1225-1255								
						390-510 (3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,2 bar	100	225,0-245,0	1100	12,4+0,1
1100	146,0-149,0		500	123,0-127,0		(221,0-249,0	700	13,3+0,1
	(143,5-151,5)			(120,0-130,0			900	13,0+0,2
LDA	0,7 bar		LDA	0 bar	250	10,0-15,0	1000	12,5+0,3
	157,0-161,0		500	110,0-113,0		(7,5-17,5)		
	(154,0-164,0)			(107,5-115,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel (1) mm diminution difference
PES 6 P..LS 375 + RQV..PA 373 DR	0,70	0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 q 19
2. Edition

En

PES 6 P 110 A 720 LS 375 RQ 250/1100PA 658

Komb.-Nr. 0 402 046 251
0 402 046 253
0 402 046 297

supersedes 10.83
company MAN
engine D 2566 MT (F)
206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,	1145-1160	250	7,4	100	min.8,9	1100	12,4-12,5
VH	= max. 46°			4,0	1900-1220			250	7,3-7,5	700	13,3-13,4
				1350	0-1,0			355-395	= 2,0	880	13,1-13,3
										990	12,6-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-225,0 (211,0-229,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)		

Checking values in brackets

5.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS375 + RQ..PA658	0,70	0 0,20 0,32	13,3 - 13,4 11,3 - 11,4 11,8 - 11,9 12,4 - 12,8

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11,1 q 23

2. Edition

En

PES 6 P 110 A 720 LS 375 RQ 250/1100 PA 658-4

Komb.-Nr. 0 402 046 258

supersedes 10.83
company MAN
engine D 2566 MTSFV
191 kW/2200 min^{-1}
MAN-Nr. 2-7384

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	13,6-13,8	0,4(0,8)			
250	6,8-7,0	1,1-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,7	1145-1160	250	7,0	100	min. 8,5	1100	11,7-11,8
VH =	max. 46°			4,0	1200-1230			250	6,9 - 7,1	700	11,7-11,9
				1350	0-1,0			370-410	= 2,0		

Torque control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar	-	LDA	0,17 bar	100	215,0-235,0
1100	136,0-138,0		500	123,0-127,0		
	(133,0-141,0)			(120,0-130,0)		
LDA	0,7 bar		LDA	0 bar		
700	133,0-137,0		500	113,0-116,0		
	(130,0-140,0			(110,0-119,0)		

Checking values in brackets

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C23

C23

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)	
PES6P..LS375 + RQ..PA658-4	0,17		11,5 - 11,6	
		0,70	11,7 - 11,8	
		0	11,0 - 11,1	
		0,11	11,2 - 11,4	

Notes

(1) when n rev/min and gauge pressure bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,1r5
1. Edition
En

PES6P110A720LS375 RQV 250-1100 PA 669
Komb.-Nr. 0 402 046 272
0 402 046 273

supersedes –
company: MAN
engine D 2566 MTF
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca.15	100	min.8,9	300	2,0-2,3
ca. 66	11,4	1140-1150					250	7,3-7,5	850	5,9-6,1
	4,0	1235-1265							1000	8,2
	1350	0-1,0				365-480 (3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,2 bar	100	225,0-245,0	1100	12,4+0,1
1100	146,0-149,0		500	123,0-127,0		(221,0-249,0)	700	13,3+0,1
	(143,5-151,5)			(120,0-130,0)			900	13,0+0,2
LDA	0,7 bar		LDA	0 bar	250	7,3-7,5 mmRW	1000	12,5+0,3
700	157,0-161,0		500	110,0-113,0				
	(154,0-164,0)			(107,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

DA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure = in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS375 +RQV..PA 669	0,70	0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D2

D2
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 r 4
2. Edition
En

PE 6 P 110 A 320 RS 375 RQV 250-1100 PA 674
komb.-Nr. 0 402 046 282

supersedes 0. 8 :
company MAN
engine D 2566 MTE
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) 7yl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring-tensioning (torque control valve) mm 6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,7·)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,5	300	1,4-1,7
							250	6,9-7,1	800	5,0-5,2
ca.46	10,5	1140-1150					340- 400=2,0		1100	7,9
	4,0	1205-1235								
	1350	0 - 1,0				(3a)				

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,17 bar	100	215,0-235,0	800	12,8+0,1
800	159,0-162,0		500	122,0-126,0		(211,0-239,0	1100	11,5+0,1
	(159,5-164,5)			(119,0-129,0			900	12,4+0,2
LDA	0,7 bar		LDA	0 bar	250	11,0-16,0	1000	11,7+0,3
1100	136,0-140,0		500	97,0-100,0		(8,5-18,5)		
	(133,0-143,0)			(94,5-102,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

D3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PES 6 P..LS 375 + RQ..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D4

D4
En

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF11,6 t
5. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 320 RS 384 RQ 225/1000 PA 571
Komb.-Nr. 0 401 846 452
1 - 5 - 3 - 6 - 2 - 4 je 60° ±0,5° (±0,75°)

supersedes 11.82
company: DAF
engine: DKDL 1160
125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) 3,20-3,30 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,4+0,1	9,80 - 10,00	0,35(0,6)			
250	7,5-7,7	0,90 - 1,30	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,6 4,0 1250	1045-1060 1100-1130 0 - 1,0	250	7,6	100 250 345-385	min. 8,4 7,5-7,7 =2,0	1000 600 820 900	10,6-10,8 11,4-11,5 11,2-11,4 10,8-11,1

Torque-control travel on flyweight assembly dimension a = mm Speed regulation. At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
600	98,0 - 100,0 (96,0 - 102,0)	600	1000	93,0 - 97,0 (90,5 - 99,5)	100	170,0 - 210,0 (166,0-214,0) = 19,5 - 21,0 mm RW
					250	9,0 - 13,0 (6,5 - 15,5)

Checking values in brackets

7.84

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 DAF 11,6 t 2

3. Edition

En

PE 6 P 100 A 320 RS 384 RQ 225/1100 PA 574
Komb.-Nr. 0 401 846 453

supersedes 11.82
company DAF
engine DKL
151 kW (205 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6)			
225	7,2-7,4	1,0 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,8	1140-1155	225	7,3	100	min. 7,5	600	11,5-11,6
				4,0	1170-1200			225	7,2-7,4	1050	10,8-11,0
				1300	0 - 1,0			325-365	=2,0	800	11,2-11,4
										855	10,9-11,2

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation: At 1140-1155 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
600	110,5-112,5 (108,5-114,5)	600	1050	107,0-111,0 (104,5-113,5)	100	195,0-235,0 (191,0-239,0) = 19,5 - 21,0 mm RW

Checking values in brackets

7.84

D6

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

DC

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 w

1. Edition

En

PE 6 P 100 A 320 RS 384-1 RSV 250-1100 P 5/506

Komb.-Nr. 0 401 876 284

Note VDT-I-420/114

supersedes -

company DAF

engine DK 1160 V

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6)			
250	7,2-7,4	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,8	1050	10,8-11,0
	x = 4,25								600	11,5-11,6
							250	7,2-7,4	825	11,2-11,4
ca. 50	9,8	1125-1135					570-630=2,0		900	11,1-11,4
(2a)	4,0	1225-1255								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
600	110,5-112,5 (108,5-114,5)	1125-1135*	1050	106,5-111,5 (104,0-114,0)	100	195,0-235,0 250 (191,0-239,0) = 19,5-21,0 mm RW	250	7,3

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D7

D7

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 11,6 t 6

1. Edition

En

PE 6 P 100 A 320 RS 384-1 RQ 225/1000 PA 571

Komb.-Nr. 0 401 846 465

supersedes -

company DAF

engine DKDL 1160 125 kW

Test on ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,4+0,1	9,8-10,0	0,35(0,6)			
250	7,5-7,7	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,6	9,6 4,0 1250	1045-1060 1100-1130 0-1,0	250	7,6	100 250 345-385	min.8,4 7,5-7,7 =2,0	600 1000 820 900	11,4-11,5 10,6-10,8 11,2-11,4 10,8-11,1

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation At 1045-1060 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
600	98,0-100,0 (96,0-102,0)	600	1000	93,0-97,0 (90,5-99,5)	100	180,0-220,0 (176,0-224,0) = 19,5-21,0 mm RW

Checking values in brackets

7.84

D8

D8

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 s 3
1. Edition
En

PE 6 P 100 A 320 RS 384-1 RQ 225/1100 PA 574
Komb.-Nr. 0 401 846 466

supersedes
company DAF
engine DKL 1160
151 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5+0,1	11,1-11,3	0,35(0,6			
225	7,2-7,4	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,8 4,0 1300	1140-1155 1170-1200 0-1,0	225	7,3	100 225 325-365	min,7,5 7,2-7,4 =2,0	600 1050 800 855	11,5-11,6 10,8-11,0 11,2-11,4 10,9-11,2

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation: At 1140-1155 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
600	110,5-112,5 (108,5-114,5)	600	1050	107,0-111,0 (104,5-113,5)	100	195,0-235,0 (191,0-239,0) = 19,5-21,0 mm RW
					225	7,2-7,4 mm RW

Checking values in brackets

7.84

D9

D9

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 t 1
4. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 385 RSV 250-750 P7/479 supersedes 11.82
Komb.-Nr. 0 401 876 250 company DAF
1 - 5 - 3 - 6 - 2 - 4 engine DK, DKT, DKS, DKA 1160
0 -60 -120-180-240-300° ± 0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0 - 12,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
750	12,6+0,1	16,9 - 17,2	0,4(0,75)			
250	6,8-7,0	2,5 - 3,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.18	250	6,9	-	-
	X =	3,75					250	6,8-7,0		
ca. 44 (2a)	790-795 =	11,6					245-305	=2,0mm		
	810-825 =	4,0								
	950 =	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	169,0 - 172,0	790- 795 *	-	-			-	-
	(166,5 - 174,5)				250	25,0-33,0		
						(22,5-35,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D10

D10

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 t 4
(1A) 2. Edition
En

PE 6 P 110 A 320 RS 385-1 RSV 250-750 P 7/479
Komb.-Nr. 0 401 876 256

supersedes 11.82
company DAF
engine DK, DKT, DKS; DKA

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)= RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,6+0,1	17,0 -17,3	0,4(0,75)			
250	6,8-7,0	2,5-3,3	0,4 5(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	6,9	-	-
	x = 3,75						250	6,8-7,0		
ca.44 (2a)	11,6	790-795					245-305 = 2,0			
	4,0	810-825								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	170,0-173,0 (167,5-175,5)	790-795*	-	-	-	-	-	-
					250	25,0-33,0 (22,5-35,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D11

DAA

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 658-8
Komb.-Nr. 0 402 046 266
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: MAN
engine: D 2566 MK 279
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,8+0,1	18,7-18,9	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider ① PRG check		Full-load speed regulation ④ Setting point		Test specifications		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1095-1110	250	6,4	100	min.7,9	750	11,8-11,9
VH = max. 46°				4,0	1175-1205			250	6,3-6,5	1050	10,7-10,8
				1300	0-1,0			340-380 = 2,0		870	11,6-11,8
										935	10,9-11,2

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation At 1095-1110 min-1 — 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	205,0-225,0
750	187,0-189,0		650	178,0-184,0		(201,0-229,0)
	(184,0-192,0)			(175,0-187,0)		
LDA	1,0 bar		LDA	0 bar	250	6,3-6,5 mm RW
1050	167,0-173,0		500	113,0-115,0		
	(164,0-176,0)			(110,0-118,0)		

Checking values in brackets

7.84

D12

DR

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS388 + RQ..PA658-8	1,0	0 0,31 0,44	11,8-11,9 9,5-9,6 10,5-10,6 11,2-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

'WPP 001/4 MAN 11,1 q 26
2. Edition

En

PES 6 P 120 A 720 LS 388 Z RQ 250/1100 PA 658-7
Komb.-Nr. 0 402 046 286
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.83
company: MAN
engine: D 2566 MK/SIB
235 kW/2200 min^{-1}
MAN-Nr. 2-7463

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 413

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	17,9-18,1	0,5(0,9)			
250	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=max. 46°	19,2-20,8	600	20,0	10,3 4,0 1350	1145-1160 1185-1215 0-1,0	250	6,5	100 250 335-375	min.8,0 6,4-6,6 =2,0	1100 750 865 970	1,3-11,4 2,4-12,5 2,2-12,4 1,5-11,8

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	Control rod travel / cm^3/1000 strokes / mm 7
LDA 1100	0,7 bar 179,0-181,0 (176,0-184,0)	-	LDA 500	0,33 bar 146,0-152,0 (143,0-155,0)	100	205,0-225,0 (201,0-229,0)
LDA 750	0,7 bar 197,0-203,0 (194,0-206,0)		LDA 500	0 bar 103,0-105,0 (100,0-108,0)	250	12,0-18,0 (9,0-21,0)

Checking values in brackets

7.84

D14

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 26

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 Z RQ..PA 658-7	0,70	0 0,33 0,43	12,4-12,5 9,4-9,5 10,9-11,0 11,4-11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D15

En 345

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 8,0 e

8. Edition

En

PE6P110 A 720 RS 393 RQV 200-1200 PA 467

superseded 10.83

company: Scania

engine DN 801

Komb.-Nr. 0 401 846 424

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,0+0,1	8,7-8,9	0,5(0,7)			2,5±0,1
225	6,9 -7,1	1,1-1,5	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.16	100	min.8,4	150	0,5-0,8
									500	3,6-4,2
ca.61	11,0	1240-1250					225	6,9-7,1	850	5,8-6,0
	4,0	1365-1395					440-500=	2,0	1200	8,2
	1500	0 - 1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
600	87,0-89,0 (85,0-91,0)	1240-1250*	1200	98,5-103,5 (96,0-106,0)	100	140,0-190,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

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Test Specifications Fuel Injection Pumps and Governors ①

WPP 001/4 SCA 8,0 e 1

5. Edition

En

PE6P110A 720 RS 393 RQV 250-1200 PA469

Komb.-Nr. 0 401 846 423

superseded 10.83

company Scania

engine DN 801

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,0+0,1	8,7-8,9	0,5(0,7)			2,5 ± 0,1
225	6,9-7,1	1,1-1,5	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.13 (3a)	100	min.8,4	200	0,7-0,9
ca.51	11,0 4,0 1450	1240-1250 1325-1355 0 - 1,0					225 335-395	6,9-7,1 =2,0	500 800 1200	3,0-3,5 5,1-5,3 8,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
500	87,0-89,0 (85,0-91,0)	1240-1250*	1200	98,5-103,5 (96,0-106,0)	100	140,0-190,0 =20,0-21,0 mm RU	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D17

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 8,0 n 1
3. Edition
En

PE 6 P 110 A 720 RS 393 RQ 750 PA 528

Kom.-Nr. 0 401 846 479

supersedes 10.83
company Scania
engine DN 8 01

Tested #13

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	9,0-9,2	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0 4,0 850	750-755 784-797 0 - 1,0	-	-	-	-	-	/ -

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / min 7
700	90,0-92,0 (88,0-94,0)	-	-	-	100	140,0-190,0 = 20,0-21,0 mm RW

Checking values in brackets

7.84

D18

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SCA 8,0 n
3. Edition
En

PE 6 P 110 A 720 RS 393 RQ 900 PA 528
Komb.-Nr. 0 401 846 480

supersedes 10.83
company Scania
engine DN 8 01

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
850	12,0+0,1	9,4-9,6	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,0 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation. At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
850	94,0-96,0 (92,0-98,0)	-	-	-	100	140,0-190,0 = 20,0-21,0 mm RW

Checking values in brackets

7.84

D19

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 n 3
2. Edition
En

PE 6 P 110 A 320 RS 407-1 RQ 250/1100 PA 428/2 R
Komb.-Nr. 0 401 846 469

supersedes 12.82
company DAF
engine DKTL 1160
185 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)= RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1-14,4	0,4 (0,75)			
250	7,1-7,3	1,0-1,4	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,3 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	7,2	100 250 345-385	min. 7,8 7,1-7,3 = 2,0	850 1100	12,3+0,1 12,2+0,2

1145-1160 min⁻¹

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,5 bar 140,5-143,5 (138,0-146,0)	-	LDA 600	0 bar 136,5-139,5 (134,0-142,0)	100	245,0-285,0 (241,0-289,0) =19,5-21,0 mm RW

Checking values in brackets

5.84

D20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE6P..RS407-1 + RQ..PA 428/2R	0,30		12,1 - 12,2
		0,50	12,3 - 12,4
		0	12,0 - 12,1

Notes

(1) when n rev/min and gauge pressure = bar (maximum full-load control rod travel)

D21

D21 En

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 11,6 v
2. Edition
En

PE6P110 A 320 RS 407-1 RSV 275-1000 P5/458-3
Komb.-Nr. 0 401 876 275

superseded 3.84
company DAF
engine DKCL 1160
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm from BDC RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
600	12,3+0,1	14,0-14,3	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.23	275	6,6	600	12,5-12,6
	x	= 4,5					275	7,0-7,2	1000	11,1-11,3
ca.48	10,1	1040-1050					675-735	= 2,0	750	12,1-12,3
(2a)	4,0	1160-1190							850	11,4-11,7
	1325	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to 1: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	LDA	0,7 bar	100	245,0-265,0	0 -	-
600	139,5-142,5		1000	114,5-119,5		(241,0-269,0)		
	(137,0-145,0)			(111,5-122,5)	275	9,0-14,0		
			LDA	0 bar		(6,5-16,5)		
			600	136,5-139,5				
				(133,5-142,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D22

D22

D. Adjustment Test for Manifold Pressure Compensator

Test at n 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel diminution / difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PE6P..RS 407-1	0,70		12,3-12,4
+RSV..P5/458-3		0	12,1-12,2
		0,28	12,2-12,3

Notes

(1) when n rev/min and gauge pressure bar (maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

NPP 001/4 RVI 8,8 b 1
E. Edition

En

PES 6 P 120 A 320 RS 417 RDV 300-1150 PA 527 K

superseded 5.83
company RVI
engine MIDS 062030
158 kW (215 PS)
Komb.-Nr. 0 402 046 226

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Port-closing mark 10,5° camshaft after port closing of cylinder 1.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,6-14,8	0,5(0,9)			
600	2,6-2,8	1,3- 1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.10	100 300	min.5,7 4,1-4,3	250 550 850 1150	0,4-0,7 3,6-3,7 5,1-5,2 7,5
ca. 57	7,5 4,0 1400	1205-1215 1275-1305 0-1,0				330-445 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	145,5-147,5 (142,5-150,5)	1205-1215*	750 500	125,0-131,0 (123,0-134,0) 71,0-77,0 (68,0-80,0)	100 300	125,0-145,0 (121,0-149,0) 18,0-24,0 (15,0-27,0)	1150 350 750 500	8,5+0,1 6,8+0,4 7,6+0,1 7,0+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

D24

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

D24

Test Specifications Fuel Injection Pumps (1A) and Governors

PE6P 110 A 320 RS 407-1 RSV 275-1100 P 5/458-4
Komb.-Nr. 0 401 876 276

supersedes 3.84
company DAF
engine DKTL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1-14,4	0,4 (0,75)			
275	7,0-7,2	1,0- 1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3 - 1,0 x = 3,25		-	-	-	ca. 18	275	6,6	400	12,5-12,6
							275	7,0-7,2	300	12,7-13,2
ca. 47	11,3	1135-1145					675 - 745 =2,0			
(2a)	4,0	1275-1305								
	1350	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1135-1145*	LDA	0 bar	100	245,0-285,0	-	-
850	140,5-143,5		600	136,5-139,5		(241,0-289,0)		
	(138,0 -146,0			(134,0-142,0)	275	10,0-15,0		
						(7,5-17,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..RS 407-1 +RSV..P5/458-4	0,70	0 0,30	12,3 - 12,4 12,0 - 12,1 12,1 - 12,2

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E2

En E2

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DAF 11,6 v 2
1. Edition
En

PE 6 P 110 A 320 RS 407-1 RSV 275-1000 P 5/458-5
Komb.-Nr. 0 401 876 277
Note VDT-I-420/114!

supersedes -
company DAF
engine DKFL 1160
185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,8+0,1	15,1-15,4	0,4 (0,75)			
275	7,0-7,2	0,9-1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	275	6,6	600	13,0-13,1
	x	5,0					275	7,0-7,2	1000	12,1-12,3
							700-760	=2,0	790	12,6-12,8
ca.50	11,1	1040-1050							865	12,2-12,5
(2a)	4,0	1195-1225								
	1360	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 600	0,7 bar 151,0-154,0 (148,5-156,5)	1040-1050*	LDA 1000	0,7 bar 135,5-140,5 (132,5-143,5)	100	245-285,0 (241,0-289,0)	275	7,1
			LDA 600	0 bar 136,5-139,5 (133,5-142,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE6P..RS407-1 + RSV..P5/458-5	0,70	0 0,30 0,26	12,8-12,9 12,1-12,2 12,6-12,7 12,3-12,5

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E4

E4
En

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 n 4
2. Edition

En

PE 6 P 110 A 320 RS 407-1 RQ 275/1000 PA 641-1
Komb.-Nr. 0 401 846 474

supersedes 12.82
company: DAF
engine: DKCL 1160
155 kW

Testcil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	13,9-14,1	0,4(0,75)			
275	7,0-7,2	0,9 -1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,3 4,0 1300	1045-1060 1105-1135 0 - 1,0	275	7,1	100 275 345	min. 8,6 7,0-7,2 385=2,0	600 1000 815 985	12,5+0,1 11,1+0,2 12,0+0,2 11,3+0,4

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation: At 1045-1060 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 600	0,7 bar 139,0-142,0 (136,5-144,5)	-	LDA 1000	0,7 bar 114,5-119,5 (111,5-122,5)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW
			LDA 600	0 bar 136,5-139,5 (134,0-142,0)		

Checking values in brackets

5.84

E5

E5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P.. RS 407-1 + RQ.. PA 641-1	0,28	0,50 0	12,2-12,3 12,3-12,4 12,1-12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 o 2
2. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 415 RSV 250-1100 P5/474

Komb.-Nr. 0 401 8?6 247

supersedes 8.81
company DAF
engine DKS 1160 P

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,8 - 19,2	0,5(0,9)			
250	6,7-6,9	1,9 - 2,3	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	250	6,3	650	12,1+0,1
	x =	5,75							1100	10,4+0,2
							250	6,7-6,9	800	11,5+0,2
(5) ca.53	9,4	1140-1150					410-475=2,0		900	10,9+0,3
	4,0	1200-1230								
	1350	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 188,0-192,0 (185,0-195,0)	1140-1150*	LDA 1100	0,7 bar 186,0-192,0 (182,5-195,5)	100	310,0-350,0 (306,0-354,0) = 19,5 - 21,0 mm RW	250	6,8
			LDA 600	0 bar 133,0-137,0 (130,0-140,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.84

E7

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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L7

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 2

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
.. RS 415 with .. P5/474	0,7		11,9 - 12,0
		0,27	11,4 - 11,5
		0,12	10,2 - 10,4
		0	9,8 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 y
1. Edition
En

PE 6 P 120 A 320 RS 415-1 RQ 250/1100 PA 417-2
Komb.-Nr. 0 401 846 493

supersedes
company DAF
engine DKV 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,6+0,1	17,9 - 18,3	0,5 (0,9			
250	6,2-6,4	1,1 - 1,5	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
700	15,6 -16,4	700	16,0	9,6	1135-1150	250	6,3	100	min.7,2	650	1,8-11,9
				4,0	1190-1220			250	6,2 -6,4	1090	0,6-10,8
				1300	0 - 1,0			435	475 = 2,0	785	1,5-11,7
										905	0,8-11,1

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At 1135 - 1150 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
LDA	0,7 bar	-	LDA	0,7 bar	100	320,0 - 360,0
650	179,0 - 183,0		1090	197,0 - 203,0		(316,0 - 364,0)
	(176,0 - 186,0)			(193,5 - 206,5)		= 19,5 - 21,0
			LDA	0 bar		mm RW
			600	151,0 - 155,0 (148,0 - 158,0)	250	6,2 - 6,4 mmRW

Checking values in brackets

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E9

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 415-1 + RQ.. PA 417-2	0,70	0 0,44 0,35	11,6 - 11,7 10,5 - 10,6 11,3 - 11,4 10,7 - 10,9

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WP? 001/4 DAF 11,6 o 4
2. Edition
En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100 P5/474
Komb.-Nr. 0 401 876 258

supersedes 1.83
company DAF
engine DKS-1160 P

Note VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testcil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,8-19,2	0,5(0,9)			
250	6,7-6,9	1,9-2,3	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x = 5,9						250	6,7-6,9	1100	10,4-10,6
ca.53	9,4	1140-1150					410-475	2,0	800	11,5-11,7
(2a)	4,0	1200-1230							900	10,9-11,2
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 188,0-192,0 (185,0-195,0)	1140-1150*	LDA 1100	0,7 bar 186,0-192,0 (182,5-195,5)	100	310,0-350,0 (306,0-354,0) = 19,5 - 21,0 mm RW	-	-
			LDA 600	0 bar 133,0-137,0 (130,0-140,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

DAF 11,6 o 4

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 6 P.. RS 415-1 + RSV..P 5/474	0,27	0,70 0 0,12	11,4-11,5 11,9-12,0 9,8-9,9 10,2-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E12

En E12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 2
3. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527-1K

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
company: RVI
engine: MIDR 062030
Komb.-Nr. 0 402 046 247

1 688 901 113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5 (0,9)			
300	4,1-4,3	1,8-2,4	0,5 (0,9)			
Port closing mark at 6° cam shaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.						

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 58	7,5	1205-1215					300	4,1-4,3	550	3,6-3,7
	4,0	1275-1305							850	5,1-5,2
	1450	0 - 1,0				330-445 (3a)			1150	7,5

Torque control travel a = -

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	120,0-140,0 (116,0-144,0)	1150	8,5+0,1
							350	7,0+0,4
			500	80,0-86,0 (77,0-89,0)	300	18,0-24,0 (15,0-27,0)	750	7,7+0,2
							500	7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

E13

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung
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E13

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 RVI 9,8 a 2

1. Edition

En

PES 6 P 120 A 320 RS 419-1 RQ 750 PA 595-1
Komb.-Nr. 0 402 046 232
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes...
company RVI
engine MIDS 062045
130 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	24,6-24,8	0,5(0,9)			
250	5,8-6,0	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,3 4,0 900	750-755 787-800 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	246,0-248,0 (243,0-251,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

5.84

E14

E14

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,4 h

5. Edition

En

PES 6 P 110 A 820 LS 422 RQ 300/1100 PA 327-1

supersedes 7.83

company Daimler-Benz

engine: OM 407 147 kW

Komb.-Nr. 0 402 046 218
0 402 046 239

Tested to 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,6+0,1	10,3-10,5	0,4(0,8)			
300	8,2-8,4	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	9,6 4,0 1350	1145-1160 1175-1205 0-1,5	300	6,1	100 300 350-390	min.7,5 6,0-6,2 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	103,0-105,0 (100,0-108,0)	500	500	76,0-80,0 (73,0-83,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

5.84

E15

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E15

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 9,5 a
5. Edition

En

Testoil-ISO 4113

PES 5 P 110 A 820 LS 434
Komb.-Nr. 0 402 045 022
1 - 3 - 5 - 4 - 2

RQ 300/1100 PA 327-3

je 72 ± 0,5° (0,75°)

supersede 10.83
company Daimler-Benz
engine OM 409
141 kW (192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4+0,1	12,0 - 12,2	0,4(0,8)			
300	8,0-8,2	1,2 - 1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	10,5 4,0	1145-1160 1175-1205	300	7,1	100 300 375-415=2,0	min. 10,0 8,0-8,2	-	-

Torque control travel on flyweight assembly dimension a ____ mm

Speed regulation A 1145 - 1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1100	120,0 - 122,0 (117,0 - 125,0)	-	600	102,0 - 106,0 (99,0 - 109,0)	100	130,0 - 150,0 (126,0-154,0)

Checking values in brackets

5.84

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 901/4 MB 9,5 a 5
3. Edition
En

PES 5 P 110 A 820 LS 434 RSV 350-1100 PO/485
1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)
Komb.-Nr. 0 402 075 002

supersedes 10.83
company Daimler-Benz
engine OM 409
137 kW (186 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1080	11,4+0,1	12,0-12,2	0,4 (0,8)			
350	7,7-7,9	1,1-1,7	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	350	7,8	-	-
	x = 2,25						350	7,7-7,9		
ca.48 (2a)	10,4	1120-1130					470-530	= 2,0 **		
	4,0	1190-1220								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	120,0-122,0 (117,0-125,0)	1120-1130*	-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

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E17

E17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 b 2
1. Edition
En

PE 6 P 120 A 320 RS 438-1 RQV 275-1200 PA648
Komb.-Nr. 0 401 846 497
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
compa RVI
engine MIDS 062030
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,3 - 13,5	0,5 (0,9)			
275	7,4-7,6	1,5 - 2,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca.12	200	min.9,0	250	0 - 0,8
ca. 65	10,2 4,0 1500	1255-1265 1365-1395 0-1,0				275-360 (3a)	275	5,9-6,1	570 880 1200	4,7-5,0 6,1-6,3 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	133,0-135,0 (130,0-138,0)	1255-1265*	750	116,0-122,0 (113,0-125,0)	100	180,0-200,0 (176,0-204,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.84

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

E 18

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u

4. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 F 5/493

Komb.-Nr. 0 401 876 252

supersedes 7.83
company DAF
engine DHS 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
250	5,0-5,2	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	4,6	400	12,4-12,5
	X = 5,0						250	5,0-5,2	300	12,6-13,1
							525-585=2,0			
ca. 58 (2a)	11,2	1240-1250								
	4,0	1330-1360								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(6a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 137,0-140,0 134,5-142,5)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) =19,5-21,0 mm RW	-	-
					250	7,0-12,0 (4,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E19

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u

Test at n 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 441 + RSV..P 5/493	0,70	0 0,36 0,27	12,2-12,3 10,1-10,2 11,7-11,8 10,8-11,2

*Notes

*(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E20

En E20

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 DAF 11,6 u 1
2. Edition
En

PE 6 P 110 A 720 RS 441 RQ 225/1200 PA 617
Komb.-Nr. 0 401 846 461

superseded 1.82
company DAF
engine DHS 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
225	5,5-5,7	1,0 -1,5	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,6-16,4	650	16,0	11,2 4,0 1450	1235-1250 1310-1340 0 - 1,0	225	5,3	100 225 370-410	min. 6,7 5,5 - 5,7 = 2,0	1000 1190	12,2-12,3 12,1-12,3

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation A 1235-1250 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
						Control rod travel
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / mm 7
LDA 1000	0,7 bar 136,5-139,5 (134,0-142,0)	-	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) =19,5-21,0 mm RW

Checking values in brackets

5.84

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE6P..RS441	0,36		11,7 - 11,8
+ RQ..PA617		0,70	12,2 - 12,3
		0	10,1 - 10,2
		0,29	10,8 - 11,2

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

E22

E22
En

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,4 1 5

3. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 RQ 300/1100 PA 327-5

Komb.-Nr. 0 402 046 234

supersedes 7.83

company Daimler-Benz

engine OM 407 162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0±0,1	11,6-11,8	0,4(0,8)			
300	8,0-8,2	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,0 4,0 1300	1145-1160 1180-1210 0-1,0	300	8,1	100 300 375-415	min. 9,5 8,0-8,2 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	116,0 - 118,0 (113,5 - 120,5)	500	600	93,0 - 97,0 (90,0 - 100,0)	100	130,0 - 150,0 (126,0-154,0)

Checking values in brackets

7,84

E23

G23

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 L3

3. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 442 ROV 300-1100 PA 594-3

supersedes 1.83

company Daimler-Benz

Komb.-Nr. 0 402 046 233
0 402 046 301

engine OM 407
162 kW (220 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,6 - 11,8	0,4(0,8)			
300	8,0-8,2	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.32	100 300	min. 9,0 7,3-7,5	250 530	1,0-1,3 3,9-4,2
ca. 60	10,0 4,0 1300	1140-1150 1175-1205 0 - 1,0				320-450 (3a)			820 1100	5,5-5,8 8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	116,0-118,0 (113,0-121,0)	1140-1150*	600	93,0- 97,0 90,0-100,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

E24

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

E24

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 11,4 1 6
2. Edition
En

PES 6 P 110 A 820 LS 442-1 RSV 350-1100 P 0/485
Komb.-Nr. 0 402 076 053

supersedes 1.83
company Daimler-Benz
engine OM 407
177 kW (241 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,5-12,7	0,4 (0,8)			
350	7,8-8,0	1,4-2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	7,9	-	-
	x	= 3,0					350	7,8-8,0		
ca.51 (2a)	10,7	1140-1150					435-495	= 2,0		
	4,0	1220-1250								
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	125,0-127,0 (122,0-130,0)	1140-1150*	600	111,0-115,0 (108,0-118,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

F1

FA

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 8,3 o
2. Edition

En

PE 6 P 100 A 720 RS 447 RSV 250-1200 P5/493
Komb.-Nr. 0 401 876 260

supersedes 6.83
company DAF
engine DHT 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
250	5,3-5,5	0,7-1,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 5,0		- - -	ca.24	250	4,9	400 300	11,6-11,7 11,8-12,3
ca.58 (2a)	10,4 4,0 1530	1240-1250 1325-1355 0,3-1,7			100 250 540-600	min. 7,0 5,3 - 5,5 = 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	1240-1250*	LDA 600	0 bar 92,5-96,5 (90,0-99,0)	100 250	210,0-230,0- (206,0-234,0) 7,0-11,0 (4,5-13,5)		-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

F2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS447 + RSV..P5/493	0,32		11,1 - 11,2
		0,70	11,4 - 11,5
		0	10,4 - 10,5
		0,23	10,5 - 10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F3

P3
En

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 8,3 o 1
2. Edition

En

PE 6 P 100 A 720 RS 447 RQ 225/1200 PA 617
Komb.-Nr. 0 401 846 471

supersedes 3.83
company DAF
engine DHT 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
225	5,3-5,5	1,0 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	15,6-16,4	650	16,0	10,4	1235-1250	225	5,4	100	min. 6,0	1000	1,4-11,5
				4,0	1305-1335			225	5,3- 5,5	1200	1,3-11,5
				1450	0 - 1,0			365-405	= 2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm
Speed regulation: At 1235-1250 min^{-1}
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel / cm³/1000 strokes mm 7
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	-	LDA 600	0 bar 92,5-96,5 (90,5-98,5)	100	210,0-230,0 (206,0-234,0) = 19,5-21,0 mm RW
					225	10,0-14,0 (7,5-16,5)

Checking values in brackets

7.84

F4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F4

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 447 + RQ..PA 617	0,32	0,70 0 0,27	11,1 - 11,2 11,4 - 11,5 10,4 - 10,5 10,5 - 10,9

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 UNI 10,3 a
2. Edition

PE 6 P 110 A 720 RS 453 RQV 425-1000 PA 438-1

Komb.-Nr. 0 401 846 475

supersedes 83
company: Unic-IVECO
engine: 8205-03-500
129 kW (175 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	9,8-10,1	0,4 (0,75)			
425	6,9-7,1	2,1-2,7	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1160	15,2-17,8	-	-	-	ca. 15	100	min.8,5	400	1,5-1,6
ca.55	9,0	1040-1050					425	6,9-7,1	600	3,7-4,3
	4,0	1150-1180							800	5,8-6,1
	1300	0-1,0				420-515			1000	7,2
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/mn 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	98,0-101,0 (95,5-103,5)	1040-1050*	-	-	100	220,0-240,0 (216,0-244,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

F6

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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F6

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684
Komb.-Nr. 0 402 046 288
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.83
company: MAN
engine: D 2866 KF
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
VH = max. 46°				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

7.84

F7

F7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P..LS470 + RQ..PA684	1,0	0	12,5 - 12,6
		0,40	9,3 - 9,4
		0,24	11,1 - 11,2
			10,2 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 MAN 11,9 a1

2. Edition En

PE 6 P 120 A 720 LS 470 ROV 250-1100 PA 700

superseded 9.83

company: MAN

engine D2866 KF 265 kW

Komb.-Nr. 0 402 046 295
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca.9	100	min.6,8	325	1,6-2,0
ca.62	10,3	1140-1150					250	5,2-5,4	800	5,3-5,5
	4,0	1225-1255					360-420	=2,0	1100	7,8
	1350	0 - 1,0								

Torque control travel a = 1,15 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	1140-1150*	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)	750	12,5+0,1
							1100	11,3+0,1
							900	12,1+0,2
							1000	11,5+0,3
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F9

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel: diminution / difference mm (1)
PE6P..LS 470 +ROV..PA 700	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 10,2-10,6

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9a3
1. Edition
En

PES 6 P 120 A 720 LS 470-1 RQV 250-1100 PA 707
Komb.-Nr. 0 402 046 296
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: MAN
engine D 2866 KUL
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2 -17,8	-	-	-	ca. 12	100	min. 7,0	200	1,4-1,6
ca. 65	10,9	1140-1150					250	5,4-5,6	850	6,0-6,2
	4,0	1225-1255							1100	8,3
	1350	0 - 1,0				330-450 (3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	1140-1160*	LDA 650	1,0 bar 231,0 -237,0 (228,0-240,0	100	225,0 -245,0 221,0 -249,0	750	12,7+0,
							1100	11,9+0,
							935	12,5+0,
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 125,0-133,0)			1010	12,0+0,

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

F11

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P. LS 470-1	1,0		12,7 - 12,8
+ RQV. PA 707		0	9,4 - 9,5
		0,40	11,2 - 11,3
		0,19	9,9 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 11,6 a

2. Edition

En

PE 6 P 100 A 720 RS 473 RQ 300/1100 PA 269-1

Komb.-Nr. 0 401 846 494

supersedes 12.83

company Daimler-Benz

engine OM 355
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	12,5-12,7	0,35(0,6)			
300	8,1-8,3	1,7-2,3	0,35(0,55)			
600	---	C, Sp. 4u.5	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,1 4,0 1350	1145-1160 1200-1230 0-1,	300	6,1	100 300 350-400	min.7,5 6.0-6,2 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1100	125,0-127,0 (123,0-129,0)	-	600	117,0-121,0 (114,5-123,5)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

7.84

F13

F13

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 VOL 12,0g2
2. Edition
En
7.83

PE 6 P 120 A 320 RS 3075 RSV 650-750 P4/421

supersedes
company Volvo
engine TID 120 FG

Komb.-Nr. 0 401 876 718
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	23,3 - 23,5	0,5 (0,9)			
650	4,0-4,2	2,2 - 2,6	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 33	650	4,1	-	-
	x = 2,75						650	4,0 - 4,2		
ca. 37 (2a)	10,8	750-755					650 -	710= 2,0		
	4,0	775-785								
	930	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limit: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	233,0 - 235,0 (230,0-238,0)	750 - 750*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

E 14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 p 2
1. Edition
En

Testoil-ISO 4113

PE 12 P 110 A 920 LS 3081 RQV 300-1075 PA 588

supersedes
company KHD
engine: BF 12 L 413 FC

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

0-45-60-105-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	11,2+0,1	13,2 - 13,6	0,4 (0,8)			
300	6,7-6,9	1,6 - 2,2	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 13	100	min.8,3	250	0,6-0,8
							300	6,7-6,9	525	3,5-3,7
ca. 65	10,2	1115-1125							800	5,8-6,0
	4,0	1175-1205				350-500			1075	8,1
	1300	0-1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,75 bar	1115 - 1125*	LDA	0,75 bar	100	130,0-150,0	-	-
1075	132,0-136,0		850	129,0-133,0				
	(130,0-138,0)			(126,0-136,0)				
			LDA	0 bar				
			500	82,0- 84,0				
				(78,0- 88,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

F15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 12 P..LS 3081 with. PA 588	0,75	0 0,35 0,23	11,2 - 11,3 9,2 - 9,3 10,4 - 10,5 9,6 - 9,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 110 A 720 RS 3105 RQ 275/1150 PA 711

Komb.-Nr. 0 402 046 748

supersedes –

company UNIC-IVECO

engine 8220-22.709
177 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	11,4-11,7	0,4(0,75)			
275	5,9-6,1	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600 VH=	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1400	1195-1210 1245-1375 0-1,0	275	6,0	100 275 350-390	min.7,5 5,9-6,1 =2,0	1150 600	11,3-11,4 11,3-11,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1150	0,7 bar 114,0-117,0 (111,5-119,5)	-	LDA 400	0 bar 75,0-78,0 (72,5-80,5)	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

6.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 6 P..RS 3105 +RQ.. PA 711	0,70	0 0,26 0,20	11,3-11,4 10,0-10,1 10,9-11,0 10,3-10,5

Notes

(1) when n rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 12,0e
1. Edition

En

PE 6 P 120 A 320 RS 3121 RSV 200-900 P4/421 R
Komb.-Nr. 0 401 876 732
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company Volvo-Penta
engine TAMD 121 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
700	11,8+0,1	23,7 - 23,9	0,5 (0,9)			2,5 ± 0,1
200	5,5-5,7	1,6 - 2,2	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.20	200	5,1	-	-
	x = 4,0						200	5,5-5,7		
ca. 53 (2a)	10,8	940-950					265-325	= 2,0		
	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limiter, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	237,0 - 239,0	* 940-950	-	-	-	-	-	-
	(234,0 - 242,0)							

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 110 A 320 LS 3805 RQ 300/1150 PA 187-6
Komb.-Nr. 0 401 846 749
1 - 6 - 3 - 5 - 2 - 4
0 - 75-120-195-240-315° ± 0,5° (± 0,75°)
See Service Information VDT-I-401/102

supersedes 9.83
company Daimler-Benz
engine: OM 421
159 kW (216 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,4+0,1	13,2-13,4	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C, Sp. 4 u. 5	0,6(0,9)	-	C, Sp. 4 u. 5	
	* with return throttle (1)			* without return	throttle (2)	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min.10,0 8,3-8,5 =2,0	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
(1) 1150	128,0-130,0 (125,0-133,0)	600	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

5.84

F20

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation (4)				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min.10,0 8,3-8,5 = 2,0	-	-

Torque control travel on flyweight assembly dimension a - mm

Speed regulation At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / mm Control rod travel
1	2	3	4	5	6	7
(2) 1150	132,0-134,0 (129,5-136,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full load speed regulation (4)				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications		Setting point		Test specifications (5)			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel on flyweight assembly dimension a mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / mm Control rod travel
1	2	3	4	5	6	7

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 MB 11,0h

3. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 LS 3805 RO 750 PA 374 R

supersedes 7.81

company Daimler Benz

engine OM 421 116 kW (158 PS)

Komb.-Nr. 0 401 846 738

1 - 6 - 3 - 5 - 2 - 4

0 -75 -120-195-240-315° ±0,5° (±0,75°)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) 4,00-4,10 mm (from BDC) RW 10,5 / Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,8+0,1	14,1 - 14,3	0,4(0,8)	13,8+0,1	14,1-14,3	
300	8,2-8,4	1,3-1,9	0,4(0,7)	8,2-8,4	1,3-1,9	
	* with return throttle (1)				* without return throttle (2)	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,8 4,0	750-755 795-805	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700 (1) u. (2)	141,0 - 143,0 (138,0 - 146,0)	-	-	-	100	130,0 - 150,0

Checking values in brackets

5.84

F22

F22

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 c 2

3. Edition

En

PE6P!10A 320LS 3805 ROV 300-1150PA 524-4
Komb.-Nr. 0 401 846 748

supersedes 9.83
company Daimler-Benz
engine OM 421
159 kW (216 PS)

1 - 6 - 3 - 5 - 2 - 4
0 - 75-120-195-240-315° ±0,5°(±0,75°)
Note VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 6; PW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,4+0,1	13,2-13,4	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C, Sp. 4 u. 5	0,6(0,9)	-	C, Sp. 4 u. 5	
* with return throttle (1)				* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.19	100	min.10,0	250	1,0-1,2
							300	8,3-8,5	550	3,4-3,7
ca.65	11,5	1190-1200								
	4,0	1240-1270							850	4,9-5,3
	1400	0-1,0				330-730 ③a			1150	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed rev/min ④a 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1150 (1)	128,0-130,0 (125,0-133,0)	1190-1200*	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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F23

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1170	15,2-17,8		-	-	-		ca.19	100 300	min.10,0 8,3-8,5		250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,7
ca. 65	11,4 4,0 1400	1190-1200 1240-1270 0-1,0						330-730 (3a)					

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104 F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150 (?)	132,0-134,0 (129,5-136,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104 F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 f
6. Edition
En

Testoil-ISO 4113

PE8P120A320LS3811 RQ 300/1150 PA 556
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 10.82
company Daimler-Benz
engine OM 422 A
243 kW (330 PS)

Komb.-Nr. 0 401 848 734

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-5,15) 4,0-4,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,4 +0,1	16,2 - 16,4	0,4(0,8)			
300	5,0-5,2	1,4 - 2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	14,7-16,3	600	15,5	9,4 4,0	1195-1210 1225-1255	300	4,2	100 300 340-380	min.6,0 4,1-4,2 =2,0 mm	-	-

Torque control travel on flyweight assembly dimension a mm Speed regulation At 1195-1210 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes 7
1150	162,0 - 164,0 (159,0 - 167,0)	-	600	152,0 - 158,0 (149,0 - 161,0)	100	125 - 145

Checking values in brackets

6.84

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

superseded 8.83
company Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 705

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing 4115

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 -4,1 (3,95-4,15) mm (from BDC) Cyl. 10 ;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	12,4 - 12,6	0,4 (0,8)			
300	7,9-8,1	1,2 - 2,0	0,4 (0,7)			
600 900	-	C, Sp. 4 u.5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 385-425	min.7,7 6,0-6,2 = 2,0	1150 600 900	11,1+0,1 11,7+0,2 11,6+0,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1190 - 1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1150	124,0-126,0 (121,5-128,5)	-	600 900	110,0-114,0 (107,0-117,0) 118,0-123,0 (115,0-126,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

G2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 17,2 d

1. Edition

En

PE 8 P 120 A 920/5 LS 3827 RQV 300-900 PA 475-1
Komb.-Nr. 0 401 848 757
1-8-4-3-6-5-7-2 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: Fiat-IVECO
engine: 8280.22.201
309 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testbench data

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,1+0,1	21,3-21,5	0,5(0,9)			
300	5,2-5,4	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑯ ⑫ 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	970	15,2-17,8	-	-	-	ca.11	100	min.6,8	300	1,6-1,7
							300	5,2-5,4	450	3,5-4,1
ca. 61	12,1	940-950							750	5,1-6,4
	4,0	1045-1075							900	7,8
	1200	0-1,0				310-415 ⑬				

Torque control travel s = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ⑰ intermediate speed ⑫ rev/min 3	Fuel delivery characteristics ⑮ high idle speed ⑮ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑧ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 213,0-215,0 (210,0-218,0)	940-950*	LDA 550	0,9 bar 231,0-237,0 (228,0-240,0)	100	170,0-190,0 (166,0-194,0)	-	-
			LDA 500	0 bar 129,0-131,0 (126,0-134,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.84

BOSCH Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

G3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3827 +RQV.. PA 475-1	0,90	0 0,44 0,33	13,1-13,2 9,3-9,4 12,2-12,3 9,9-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 d
2. Edition
En.

PE 6 ZW 150/120 RS 1007/11 RQU 250-350/1100 ZWA 43 DR
Komb.-Nr. 0 402 436 039
1 - 2 - 3 - 4 - 5 - 6
0 - 45-120-165-240-285° ± 0,5° (±0,75°)

Replaces
Firm: MTU
Engine: MB 6 V 331

Note VDT-W-400/305 Governor adjustement according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm min⁻¹ 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 58	650	18,0-18,5	ca. 27	100	14,5-17,5	ca.21	150	9,5-11,8	-	-
	1100	17,5-18,0		350	7,6-8,2		250	7,7-8,2		
	1150	13,7-16,0		650	1,8-2,4		400	2,2-4,5		
	1200	3,0-10,0		1000	1,8-2,4		530	0		
	1230	0 - 1,0		1150	0					

Torque control travel a = - mm Speed regulation: At 1130-1140 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1100	18 mm RW	300 = 8,0 mm RW	-	-	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

05.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

G5

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 e
3. Edition
En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R
Komb.- Nr. 0 402 438 018
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je $45^{o} \pm 0{,}5^{o}$ ($\pm 0{,}75^{o}$)

Replaces 03.84
Firm: MTU
Engine: MT 8 V 396

Note VDT-W-Gen./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Cyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Sleeve position 49,5 mm

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	min⁻¹	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 52	750	18,0		-	-	-	-	-	-	-	-
	720	25,6-30,6									
	750	17,0-19,0									
	770	6,8-11,8									
	780	0,5-8,0									
	800	0									

Torque control travel a = - mm Speed regulation: At 760-765 min⁻¹ - mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
750	18 mm RW	Leerlaufanschl 12 mm RW	-	-	-	-

Checking values in brackets

06.84

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 a
11. Edition
En.

PE 8 ZWM 140/120 RS 19/11 RQU 375/1100 ZWA 25 DR
Komb.-Nr. 0 406 038 019

Replaces 12.83
Firm: MTU
Engine: MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 ie 45° ± 0,5° (± 0,75°)
Note VDT-W-Gen./7
Governor adjustement according to VDI-I-420/112
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600	9,0	143,0-163,0	14,0 (21,0)	138,0- 168,0	-
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	8,0 (12,0)	C, Sp. 2	
380			8,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	Torque control: min ⁻¹ 10	Control-rod travel mm 11
max.	500	23,5-24,0	(Position of slider)			22	600	2,1-2,6	500	21,7-22,1
ca. 58	1100	19,0-19,5					150	12,0-14,0	700	20,9-21,5
	1130	15,0-18,0					250	10,4-12,4	1000	19,5-20,0
	1200	6,2-12,4					375	5,6-6,0	1100	19,0-19,5
	1250	0 - 7,8			1100	0,4-1,6	500	2,3-3,1		
	1350	0 - 1,0			1180	0	900	1,1-2,0		

Torque control travel a = 0,8 mm +0,05 Speed regulation: At 1120-1130 min⁻¹ less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min ⁻¹ 1	cm³/1000 strokes 2	Control-rod stop min ⁻¹ 3	Fuel-delivery characteristics min ⁻¹ 4	cm³/1000 strokes 5	Starting fuel* delivery min ⁻¹ 6	cm³/1000 strokes 7
1080	232,0-236,0 (229,0-239,0)	1220 RW max. 5 mm	900	228,0-236,0 (224,0-240,0)	100	18,0-18,2 mm RW
			700	228,0-236,0 (224,0-240,0)		Butée de ralenti
			500	216,0-224,0 (212,0-228,0)	375	53,0-58,0

Checking values in brackets

06.84

* Limit the quantity at the exess-fuel stop.

G7

G7

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 13,8 b
1. Edition
En

PE 6 P 100/420 LS 89 RSV 250-1000 P 7/312 R

Komb.-Nr. 0 401 876 058

Note VDT-I-401/ 103

supersedes
company KHD
engine F 6 M 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,4-13,2	0,5			
600	9,0	5,4-6,4				
600	12,0	11,4-12,7				
600	15,0	17,5-18,8				
200	9,0	3,6-4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 68	1000	16,0	without auxiliary spring	ca. 28	300	6,0	980	0
	1050	9,0			100	19-21	450	0
	1080	4,0			300	5,7-6,3	340	1,2-1,8
(2a)	1050	7,0-10,0	with auxiliary spring		350	3,2-4,5		
	1100	1,5-3,8			450	0-1,0		
	1180	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Take	from VDT-I-401/103				-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.84

G8

G8

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9a 9
4 . Edition
En

Testoil-ISO 4113

VA 4/100 H 1050 BR 12 0 460 304 048
BR 12-3 · 0 460 304 049
BR 12-7 0 460 304 142

supersede 6.82
company IHC
engine XDD 239

DHK:1 688 901 920

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	600	8,1-9,1	mm		
1 2 Supply pump pressure	600	4,5-5,0	kp/cm²		
1 3 Full load delivery without charge-air pressure	800	64,0-65,0	cm³/1000 strokes		2,5
Full load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	250	17,5-23,5	cm³/1000 strokes		3,0
1 5 Start	100	mind. 85	cm³/1000 strokes		
1 6 Full load speed regulation	1100	41,0-49,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	150-300	600	830-980
	mm	Beginn	(7,8-9,4)	13,7-14,4 (13,4-14,7)
2 2 Supply pump	rev/min	100	600	1050
	kp/cm²	1,6-2,1 (1,4-2,3)	(4,2-5,2)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1110-1160	0		
		1100		(40,0-50,0)	
		1030	66,0-69,0	(65,0-70,0)	
		800		(63,5-65,5)	
		500	57,0-60,0	(56,0-61,0)	
	Stop	1050	0		
Idle stop	Full	310-360	0		
		250		(16,5-24,5)	
	Start	100	mind. 85		
End stop		mind. 150			

8.84

G9

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm Maß I = 7,0 mm Maß II = 14,0 mm Maß III = 35,8 mm

G10

G10

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 e 6

1. Edition

En

VA 4/100 H 1200 CR 12-11
0 460 304 204
DHK: 1 688 901 020

supersedes -
company IHC
engine D 206

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre stroke setting 0,5 mm ± 0,02(0,04)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	2,5-3,5	mm		
1 2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1 3 Full load delivery without charge air pressure	800	61,5-62,5	cm³/1000 strokes		
Full load delivery with charge air pressure	-		cm³/1000 strokes		
1 4 Idle speed regulation	370	12,0-18,0	cm³/1000 strokes		
1 5 Start	100	min. 90	cm³/1000 strokes		
1 6 Full load speed regulation	1300	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	350-500	600	800	1020-1170
	mm	Beginn	0,9-1,9(0,6-2,2)	(2,2-3,8)	4,7-5,4(4,4-5,7)
2 2 Supply pump	rev/min	200	800	1200	
	kp/cm²	1,4-1,9(1,2-2,1)	(4,3-5,2)	6,1-6,6(5,9-6,8)	
Overflow delivery	rev/min	500		1200	
	cm³/10 s	55-100(40-110)		55-100(40-110)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1380	0		
		1300	21,0-29,0	(20,0-30,0)	
		1170	66,5-69,5	(65,5-70,5)	
		800		(60,0-63,0)	
		500	54,5-57,5	(53,5-58,5)	
	Stop	1200	0		
Idle stop	Full	420-500	0		
		370		(11,0-19,0)	
	Start	100	min. 90		
		220-300			

8.84

G11

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

GAA

Angle to the stop plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 − 8° δ = 60 + 8°	Pump Dimension A 2,0 mm Dimension B 24,65 mm

G12

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8m 1
2. Edition
En

Test-ISO 4113

VA 6/10 H 1100 CR 87-2
0 460 306 248

DHK 1 688 901 020 / 172+3 bar

supersedes 10.79
company IHC
engine D 358

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	700	3,8-4,6	mm		
1 2 Supply pump pressure	700	4,8-5,3	kp/cm²		
1 3 Full load delivery without charge air pressure	800	67,5-68,5	cm³/1000 strokes		2,5
Full load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	400	9,5-15,5	cm³/1000 strokes		3,0
1 5 Start 196 bar	100	mind. 80,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1150	33,5-41,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	400	700	800-950
	mm	0,8-1,8 (0,5-2,1)	(3,5-4,9)	5,2-5,9 (4,9-6,2)
2 2 Supply pump	rev/min	200	700	1100
	kp/cm²	2,2-2,7 (2,0-2,9)	(4,6-5,5)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-100 (40-110)		55-100 (40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1190-1240	0		
		(1170-1260)			
		1150		(32,5-42,5)	
		1050	68,0-71,0	(67,0-72,0)	
		800		(67,0-69,0)	
		500	66,0-70,0	(65,0-71,0)	
	Stop	1100	0		
Idle stop	Full	480-530	0		
		(460-550)			
		400		(8,5-16,5)	
	Start	100	mind. 80,0		
End stop		220-320			

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,00 mm Dimension V = 24,65 mm

G14

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 4,4 p
1. Edition
En

VA 4/11 H 1200 CR 93-3
0 460 314 047
048
DHK: 1 688 901 020

supersedes
company IHC
engine D 268

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (0,04)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,0-5,8	mm		
1.2 Supply pump pressure	700	4,7-5,2	kp/cm²		
1.3 Full load delivery without charge air pressure	800	80,0-81,0	cm³/1000 strokes		3,0
Full load delivery with charge-air pressure	-		cm³/1000 strokes		
1.4 Idle speed regulation	350	14,0-20,0	cm³/1000 strokes		3,0
1.5 Start	100	min. 95	cm³/1000 strokes		
1.6 Full load speed regulation	1250	41,0-49,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	800
	mm	0,7-1,7(0,4-2,0)	(4,7-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm	1,7-2,2(1,5-2,4)	(4,5-5,4)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500	1200	
	cm³/10 s	55-100(40-110)	55-100(40-110)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1290-1350	0		
		1250		(40,0-50,0)	
		1100	85,0-88,0	(84,0-89,0)	
		800		(79,5-81,5)	
		500	78,5-81,5	(77,5-82,5)	
	Stop	1200	0		
Idle stop	Full	420-470	0		
		350		(13,0-21,0)	
	Start	100	min. 95		
		220-340			

8.84

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 36 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV 1,6 mm Dimension V 24,65 mm

G16

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 a 6

2. Edition

En

VA 6/100 H 1450 CR 124-3
0 460 306 139

supersedes
company Saviem
engine 797-10 LKW SM 8 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre stroke setting 0.2 mm ± 0,02 (± 0,04)
Setting of the pointer at a stroke of 0,3 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	1100	3,9-4,7	mm		
1 2 Supply pump pressure	1100	5,9-6,4	kp/cm²		
1 3 Full load delivery without charge air pressure	900	59,5-60,5	cm³/1000 strokes		3,0
Full load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1 4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		2,5
1 5 Start	100	mind.80,0	cm³/1000 strokes		
1 6 Full load speed regulation	1600	13,0-19,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	800	1100	1450
	mm	0,4-1,4(0,2-1,6)	(3,6-5,0)	7,0-7,7(6,6-8,0)
2 2 Supply pump	rev/min	200	1100	1450
	kp/cm²	1,3-1,8(1,1-2,0)	(5,7-6,6)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min	500		1450
	cm³/10 s	55-100(40-110)		55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1600-1700	0		
		1600		(12,0-20,0)	
		1500	53,0-59,0	(52,0-60,0)	
		1400	59,0-62,0	(58,0-63,0)	
		900		(59,0-61,0)	
		500	55,0-59,0	(54,0-60,0)	
	Stop	1400	0		
Idle stop	Full	350-450	0		
		300		(6,0-14,0)	
	Start	100	mind. 80,0		
End stop		150-250			

7.84

G17

G17

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 5,6 mm Dimension V = 24,6 mm

G18

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 4,0e
4. Edition
En

VA 4/90 H 1200 CR 144-2
0 460 394 042

supersedes —
company Steyr
engine WD 411.41

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	1000	3,9-4,7	mm		
1 2 Supply pump pressure	1000	5,1-5,6	kp/cm²		
1 3 Full load delivery without charge-air pressure	900	55,5-57,5	cm³/1000 strokes		2,5
Full load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	300	13,0-19,0	cm³/1000 strokes		3,0
1 5 Start	100	mind. 70,0	cm³/1000 strokes		
1 6 Full load speed regulation	1280	23,0-31,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	700	1000	1200
	mm	0,8-1,8(0,5-2,1)	(3,6-5,0)	5,8-6,6(5,5-6,9)
2 2 Supply pump	rev/min	200	1000	1200
	kp/cm²	1,2-1,7(1,0-1,9)	(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm³/10 s	55-100(40-110)		55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1380	0		
		1280		(22,0-32,0)	
		1150	59,5-60,5	(59,0-61,0)	
		900		(54,5-58,5)	
		500	48,5-51,5	(47,5-52,5)	
	Stop	1200	0		
Idle stop	Full	420-470	0		
		300		(12,0-20,0)	
	Start	100	mind. 70,0		
End stop		170-250			

Angle to the stop-plate	Pre-setting dimensions
Pump " = 25 ± 4° " = 45 ± 8° " = 30 - 8° " = 60 + 8°	Pump Dimension IV = 4,60 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 3,1a
3. Edition
En

Test-No. 4113

VA 4/100 H 1200 CR 145-4
0 460 304 237

supersedes --
company Steyr
engine WD 408.43

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre stroke setting 0,3 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	3,4-4,2	mm		
1.2 Supply pump pressure	1000	4,7-5,2	kp/cm²		
1.3 Full load delivery without charge air pressure	1180	65,0-66,0	cm³/1000 strokes		2,5
Full load delivery with charge air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 80,0	cm³/1000 strokes		
1.6 Full load speed regulation	1270	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-630(450-660)	1000	1140-1300
	mm	Beginn	(3,1-4,5)	5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm²	1,2-1,7(1,0-1,9)	(4,5-5,4)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1200
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1320-1370	0		
		1270		(35,0-45,0)	
		1180		(64,5-66,5)	
		900	69,0-71,0	(68,0-72,0)	
		500	62,0-65,0	(61,0-66,0)	
	Stop	1200	0		
Idle stop	Full	330-380	0		
		250		(11,0-19,0)	
	Start	100	mind. 80,0		
End stop		170-250			

7.84

Angle to the stop plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 − 8° δ = 60 + 8°	Pump Dimension IV̄ 3,40 mm Dimension V̄ 24,65 mm

G22

G22

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 4,0d
4. Edition
En

Testoil-ISO 4113

VA 4/10 H 1200 CR 145-5
0 460 304 246

supersedes –
company Steyr
engine WD 411.85

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT WPP 161/4 B
Pre setting see reverse side

Pre stroke setting 0,3 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	1000	5,7-6,5	mm		
1 2 Supply pump pressure	1000	5,0-5,5	kp/cm²		
1 3 Full load delivery without charge air pressure	1180	68,0-69,0	cm³/1000 strokes		2,5
Full load delivery with charge air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	350	10,0-16,0	cm³/1000 strokes		3,0
1 5 Start	100	mind. 70,0	cm³/1000 strokes		
1 6 Full load speed regulation	1280	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600	1000	1200
	mm	1,4-2,2(1,1-2,5)	(5,4-6,8)	7,7-8,4(7,3-8,7)
2 2 Supply pump	rev/min	200	1000	1200
	kp/cm²	1,1-1,6(0,9-1,8)	(4,8-5,7)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1200
	cm³/10 s	55-100(40-110)		55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1380	0		
		1280		(30,0-40,0)	
		1180		(67,5-69,5)	
		1000	71,5-73,5	(70,5-74,5)	
		500	62,5-65,5	(61,5-66,5)	
	Stop	1200	0		
Idle stop	Full	470-530	0		
		350		(9,0-17,0)	
	Start	100	mind. 70,0		
End stop		170-250			

G23

622

Angle to the stop-plate	Pre-setting dimensions
Pump " = 25 ± 4° ß = 36 ± 8° ' = 30 - 8° ' = 60 + 8°	Pump Dimension IV= 4,00 mm Dimension V= 24,65 mm

G24

G24

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PEU 2,1 d
3. Edition
En

EP/VA 4/90 H 2250 CR 173 (Z)
173 - 1 (Z)
173 - 2 (Z)

supersedes 4.78
company Peugeot
engine XD 4/90

Quiet-running device (see VDT-WPP 161/4, Suppl. 1)
1. Edition

Pre-stroke setting mm

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	2000	5,3-5,7	mm		
1 2 Supply pump pressure	2000	5,6-6,1	kp/cm²		
1 3 Full-load delivery without charge-air pressure	1400	36,0-37,0	cm³/1000 strokes		1,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1 4 Idle speed regulation	320	10,0-14,0	cm³/1000 strokes		3,0
1 5 Start	50	60-100	cm³/1000 strokes		
1 6 Full-load speed regulation	2310	17,0-23,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	1000	1600	2200-2400(2170-2430)
	mm	0,6-1,6(0,3-1,9)	3,0-4,0(2,7-4,3)	end (6,9-7,6)
2 2 Supply pump	rev/min	200		2000
	kp/cm²	1,0-1,5(0,8-1,7)		(5,4-6,3)
Overflow delivery	rev/min	500		2150
	cm³/10 s	70-140(60-150		70-140(60-150)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	2330-2370	10,0	
		2310	17,0-23,0 (15,0-25,0)	
		2150	32,7-35,7 (31,7-36,7)	
		1400	(35,5-37,5)	
		800	28,5-31,5 (27,5-32,5)	
		500	31,1-34,1 (30,0-35,0)	
	Stop	2250	0	
Idle stop	Full	430-570	0	
		320	(8,0-16,0)	
	Start	50	(50-120)	
		300	max.31,0	

5.84

H1

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 30 ± 4° β = 52 ± 5° γ = 10 ± 2° δ = max 58°	Pump Dimension IV 1,0 Dimension 25,0

173-1 Test as 173, but play between lever 173-2 and stop for increased idle = 5.5 - 2.0 mm.

H2

H2

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 PER 5,8 o
1. Edition

En

Test-Oel 4747

VA6/11H 1300 CL 179-2

0 460 316 038

DHK: 1688 901 020

supersedes
company Perkins
engine T6 354

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02(0,04)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	500	4,4-5,0	mm	0	
1 2 Supply pump pressure	500	4,5-5,0	kp/cm²	0	
1 3 Full load delivery without charge air pressure	500	80,0-81,0	cm³/1000 strokes	0	
Full load delivery with charge-air pressure	1300	96,0-97,0	cm³/1000 strokes	0,7	
1 4 Idle speed regulation	250	19,0-25,0	cm³/1000 strokes	0	
1 5 Start	100	min. 100	cm³/1000 strokes	0	
1 6 Full load speed regulation	1550	36,0-44,0	cm³/1000 strokes	0,7	

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	300	500		650	680-780
	mm	1,0-2,0(0,7-2,3)	(4,1-5,3)	6,0-7,0	(5,7-7,3)	7,0-7,7 (6,7-8,0)
2 2 Supply pump	rev/min	200	500		1300	
	kp/cm²	2,5-3,0(2,3-3,2)	(4,3-5,2)	6,8-7,3	(6,6-7,5)	
Overflow delivery	rev/min	500			1300	
	cm³/10 s	55-100 (40.110)			55-100 (40-110)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1600	max. 15,0	0,7
		1550	(35,0-45,0)	0,7
		1300	(95,5-97,5)	0,7
		1100	93,5-95,5(92,5-96,5)	0,7
		500	84,5-88,5(83,5-89,5)	0,3
		500	(79,5-81,5)	0
	Stop	1300	0	
Idle stop	Full	330.380	0	
		250	(18,0-26,0)	
	Start	100	min. 100	
		100-200		

H3

H3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 $\pm$ 4° β = 55 $\pm$ 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV Dimension V= 25,0mm

LDA

Start of timing advance 0,13 - 0,26 bar

End of timing advance 0,31 - 0,37 bar

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 V 7

1. Edition

En

Testoil-ISO 4113

VA 6/10 H 1100 CR 401-3

0 460 306 262

DHK: 1 688 901 020

supersedes
company IHC
engine D 358/956

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre stroke setting 0 mm See VDT-WJP 161/4, Suppl. 1)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	2,4-3,0	mm		
1 2 Supply pump pressure	800	5,0-5,6	kp/cm²		
1 3 Full load delivery without charge air pressure	800	67,2-68,2	cm³/1000 strokes		3,0
Full load delivery with charge air pressure	-	-	cm³/1000 strokes		
1 4 Idle speed regulation	350	15,0-21,0	cm³/1000 strokes		2,5
1 5 Start	100	min. 80	cm³/1000 strokes		
1 6 Full load speed regulation	1150	34,0-40,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600	800	1000	1100
	mm	0,8-1,6(0,5-1,9)	(2,0-3,4)	3,7-4,3(3,3-4,7)	3,8-4,5(3,5-4,8)
2 2 Supply pump	rev/min	200	800	1100	
	kp/cm²	1,7-2,3(1,5-2,5)	(4,8-5,8)	5,9-6,5(5,7-6,7)	
Overflow delivery	rev/min	500		1100	
	cm³/10 s	55-100(40-110)		55-100(40-110)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1190-1240	0		
		1150		(33,0-41,0)	
		1080	65,5-68,5	(64,5-69,5)	
		800		(66,7-68,7)	
		500	67,0-70	(66,0-71,0)	
	Stop	1100	0		
Idle stop	Full	520-580	0		
		350		(14,0-22,0)	
	Start	100	min. 80		
End stop		260-360			

H5

7.84

115

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 50 + 8°	Pump Dimension IV = 3,0 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 IHC 5,8 V 6

1. Edition

Testoil-ISO 41-13

VA 6/10 H 1150 CR 401-4

0 460 306 264

DHK: 1 688 901 020

supersedes

company IHC

engine D 358/1056

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm See VDT-WJP 161/4, Suppl. 1)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	2,4-3,0	mm		
1 2 Supply pump pressure	800	4,8-5,4	kp/cm²		
1 3 Full-load delivery without charge-air pressure	800	70,5-71,5	cm³/1000 strokes		3,0
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1 4 Idle speed regulation	350	15,0-21,0	cm³/1000 strokes		2,5
1 5 Start	100	min. 80	cm³/1000 strokes		
1 6 Full-load speed regulation	1200	38,5-44,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600	800	1000	1150
	mm	0,9-1,7(0,6-2,0)	(2,0-3,4)	3,7-4,3(3,3-4,7)	3,8-4,5(3,4-4,8)
2 2 Supply pump	rev/min	200	800	1150	
	kp/cm²	1,7-2,3(1,5-2,5)	(4,6-5,6)	6,0-6,6(5,8-6,8)	
Overflow delivery	rev/min	500		1150	
	cm³/10 s	55-100(40-110)		55-100(40-110)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1240-1300	0		
		1200		(37,5-45,5)	
		1130	70,0-73,0	(69,0-74,0)	
		800		(70,0-72,0)	
		500	71,5-74,5	(70,5-76,0)	
	Stop	1150	0		
Idle stop	Full	510-570	0		
		350		(14,0-22,0)	
	Start	100	min. 80		
End stop		260-360			

7.84

H7

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H7

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 4° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,8 mm Dimension V = 24,65 mm

H8

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 Volvo 3,6 n
2. Edition

VE 6/11 F 1800 L 18-3 **Overflow temperature 45° C**

0 460 416 027

supersedes 3.84
company: Volvo
engine: TD 40 A (93 kW)

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ±0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	3,6-4,0	mm	0,75	
1 2 Supply-pump pressure	1500	6,6-7,2	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	500	43,5-45,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	62,0-63,0	cm³/1000 strokes	0,75	
1 4 Idle regulation	325	8,0-12,0	cm³/1000 strokes	0	
1 5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes	0	
1 6 Start	2000	19,0-25,0	cm³/1000 strokes	0,75	
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1100	1500	1800
LDA=0,75 bar	mm	1,6-2,4(1,3-2,7)	(3,1-4,5)	4,5-5,3 (4,2-5,6)
2 2 Supply pump	n = rev/min	400		1800
LDA=0,75 bar	bar (kgf/cm²)	2,8-3,4		7,7-8,3
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2100	max. 2,0		0,75
	2000		(17,0-27,0)	0,75
	1900	39,0-49,0	(39,0-49,0)	0,75
	1800	56,3-59,3	(55,55-60,05	0,75
	1500		(60,25-64,75)	0,75
	*500	50,0-52,0	(48,25-53,75)	0,23
	500		(41,75-47,25)	0
switch-off				
Idle stop	400	max. 3,0		
	325		(6,0-14,0)	
End stop	110	min. 60		
	220	max. 40		

2 4 Solenoid — max. cut-in voltage xx min. 10 V; test voltage xxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,9-6,2
MS	1,2-1,4
SVS	max. 4,7
AXK	20.2-22,2
BXL	10,4-16,4

Observations

*Manifold-pressure compensator stroke = 4,0 mm

Test Specifications Distributor-type Fuel-injection Pumps

WPP001/4 VMA 2,0 d
1. Edition
En

VE 4/9 F 2150 L31-1 Overflow temperature 45° C

0 460 494 133

supersedes –
company: Motori VM
engine: HR 488 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1900	6,4-6,8	mm	0,8	
	1900	5,7-6,3	bar (kgf/cm²)	0,8	
1 2 Supply-pump pressure	1600	46,5-47,5	cm³/1000 strokes	0,8	3,0
1 3 Full load delivery with charge-air pressure	1600	34,5-35,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure					
1 4 Idle regulation	400	8,0-12,0	cm³/1000 strokes	0	3,0
1 5 Full speed regulation	2300	27,5-33,5	cm³/1000 strokes	0,8	
1 6 Start	100	min. 44,0	cm³/1000 strokes	0	
1 7 Load dependent port closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1900	2150
	mm	1,3-2,1 (1,0-2,4)	(5,9-7,3)	7,5-8,3 (7,2-8,6)
2 2 Supply pump	n = rev/min	400		2150
	bar (kgf/cm²)	2,0-2,6		6,3-6,9
Overflow delivery	n = rev/min			
	cm³/10 s			

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2600	max. 2,0		0,8
	2450	max. 10,0		0,8
	2300		(26,5-34,5)	0,8
	2150	40,0-43,0	(39,2-43,8)	0,8
	1600		(44,7-49,3)	0,8
	1600		(32,7-37,3)	0
	* 600	38,3-41,3	(36,8-42,8)	0,27
	600	30,5-33,5	(29,0-35,0)	0
switch-off				
Idle stop	800	max. 2,0		
	500	max. 6,0		
	400		(6,0-14,0)	
End stop	350	min. 44		
	450	max. 43		

2.4 Solenoid — max cut-in voltage xxx min. 10 V
test voltage xxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,3
KF	5,7-5,9
MS	0,7-0,9
SVS	5,6
A	
B	

Observations

*Manifold-pressure compensator stroke = 3,8 mm

H10

HAO

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/FIA 1,7a

5. Edition

Overflow temperature 45° C

VE 4/9 F 2300 R 54   0 460 494 044

supersedes: 9.83
company: Fiat
engine: X8/28

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	5,1-5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure			cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	34,2 - 35,2	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	350	8,0-12,0	cm³/1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	16,0-22,0	cm³/1000 strokes		
1.6 Start	100	min. 48	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,7-2,5 (1,4-2,8)	(3,8-5,2)	7,2-8,0 (6,9-8,3)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm²)	2,5-3,1		6,9-7,5
Overflow delivery	n = rev/min	400		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2500	4,5-10,5 (3,5-11,5)	
	2400	(15,0-23,0)	
	2250	28,0-30,0(26,7-31,3)	
	1500	(32,4-37,0)	
	600	23,5-26,5(22,0-28,0)	
switch-off	2300	0	
Idle stop	350	(6,0-14,0)	
	400	max. 4,0	
	540	0	

2.4 Solenoid: max. cut-in voltage ~~xxx~~ min. 10 V; test voltage ~~XXXXXXXX~~ rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,5
X_AK	20,1-22,1
X^BL	9,5-13,3

Observations

H11

BOSCH

9.84

Haa

Test Specifications Distributor-type Fuel-injection Pumps

WPP001/4 MAN 5,6 p
1. Edition
En

VE6/11F 1100 R55-8 Overflow temperature 45° C

0 460 416 037

supersedes -
company: MAN
engine: D0 226 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	700	2,9-3,3	mm		
1 2 Supply-pump pressure	700	3,9-4,5	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	700	69,0-70,0	cm³/1000 strokes		3,5 (4,0)
1 4 Idle regulation	300	2,5-6,5	cm³/1000 strokes		3,0 (4,0)
1 5 Full-speed regulation	1250	19,0-25,0	cm³/1000 strokes		
1 6 Start	100	75,0-105,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	500	700	900
	mm	0,9-1,7 (0,6-2,0)	(2,4-3,8)	4,0-4,8 (3,7-5,1)
2 2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,9-3,5		5,7-6,3
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1330	max. 1,5	
	1250	(17,5-26,5)	
	1100	75,5-78,5(74,4-79,6)	
	900	73,5-76,5(72,4-77,6)	
	700	(66,9-72,1)	
	500	64,0-68,0(62,6-69,4)	
switch-off			
Idle stop	340	max. 1,5	
	300	(0-9,0)	
End stop	350	min. 80	
	450	max. 80	

2 4 Solenoid		
	max. cut-in voltage	xx min. 10 V
	test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	2,5
A	
B	

Observations

H12

H12

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8 t

3. Edition

En

VE 6/12 F 1350 R 64
0 460 426 016

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

superseded 3.83
company IHC
engine: D 358/PC 11

Overflow temperature 45° C

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting – mm Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1150	5,2-5,6	mm		
1 2 Supply pump pressure	1150	5,6-6,2	bar (kgf/cm²)		
1 3 Full-load delivery without charge-air pressure	–	–	cm³/1000 strokes		
Full-load delivery with charge air pressure	1150	84,0-85,0	cm³/1000 strokes		3,5 (4,5)
1 4 Idle speed regulation	500	14,5-20,5	cm³/1000 strokes		3,5 (4,5)
1 5 Start	1400	44,0-50,0	cm³/1000 strokes		
1 6 Full-load speed regulation	100	min.100,0	cm³/1000 strokes		
1 7 Load-dependent start of delivery	–	–			

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	600	1150	1300
	mm	1,6-2,4(1,3-2,7)	(4,7-6,1)	5,3-6,1(5,0-6,4)
2 2 Supply pump	n = rev/min	400		1300
	bar (kgf/cm²)	2,7-3,3		6,0-6,6
Overflow delivery	n = rev/min	500		1350
	cm³/10 s	55-138(40-163)		55-138(40-158)

2 3 Fuel delivenes

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1510	max. 1,0		
	1450	9,0-17,0	(8,0-18,0)	
	1400		(42,0-52,0)	
	1300	80,0-83,0	(78,5-84,5)	
	1150		(81,5-87,5)	
	800	77,0-81,0	(76,0-82,0)	
	500	63,0-68,0	(61,8-69,2)	
switch-off	1350	0		
Idle stop	570	max. 1,0		
	520	min. 4,0		
	500		(12,5-22,5)	
End stop	250	min. 100		
	350	max. 80		

2 4 Solenoid — max cut-in voltage xxx min. 10 V; test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max.6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

H13

H43

7.84

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1.6 h
4. Edition

En

VE 4/9 F 2250 R 78
0 460 494 062/063

Overflow temperature 45° C

supersedes 11.82
company: VWW
engine: 086T-1,6

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	3,8-4,2	mm	0,75	
1 2 Supply-pump pressure	1500	5,6-6,1	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	475	7,0-11,0	cm³/1000 strokes	0	2,5 (3,0)
1 5 Full-speed regulation	100	min. 38,0	cm³/1000 strokes	0	
1 6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75	
1 7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	2250
	mm	1,8-2,6 (1,5-2,9)	(3,3-4,7)	6,1-6,9 (5,8-7,2)
2 2 Supply pump LDA=0,75 bar	n = rev/min	600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	600		2250
	cm³/10 s	55-125 (40-140)		55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2730-1870	0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,2-41,8)	0,75
	1500		(41,7-46,3)	0,75
	* 1000	33,5-34,5	(31,0-37,0)	0,3
	600		(21,0-27,0)	0
switch-off				
mech.	2250	0		
elektr.	400	0		
Idle stop	1200	max. 5,0		
	475		(5,0-13,0)	
End stop	400	min. 22,0		
	500	max. 30,0		

2 4 Solenoid — max cut-in voltage xxx min. 10 V
test voltage xxxxxxxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
A XK	18,4-20,4
B XL	10,0-13,6

Observations

Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

H14

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H44

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Ope 1,6 d
5. Edition
En
2.84

Test ISO 4113

VE 4/9 F 2300 R 82; VE ...R 82-1

0 460 494 071 0 460 494 114

Overflow temperature 45° C

supersedes
company: Opel
engine: 2033-1,6 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	3,1 - 3,5	mm		
1 2 Supply-pump pressure	1500	5,0 - 5,6	bar (kgf/cm²)		2,5
1 3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5
1 4 Idle regulation	450	6,0 - 10,0	cm³/1000 strokes		
1 5 Full-speed regulation	2785	7,0 - 13,0	cm³/1000 strokes		
1 6 Start	100	min. 40,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	**				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1200	1500	2300
	mm	1,4-2,2 (1,1 - 2,5)	(2,6 - 4,0)	6,8-7,6 (6,5 - 7,9)
2 2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	2,4 - 3,0		7,3 - 7,9
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-138 (40 - 153)		55-138 (40 - 153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	3000	max. 5,0	
	2785	7,0 - 13,0 (6,0 - 14,0)	
	2625	(16,0-24,0)	
	2300	27,4-29,4 (26,1-30,7)	
	1500	(26,7-31,3)	
	600	23,2-26,2 (21,7-27,7)	
switch-off	2300	0	
Idle stop	1200	0	
	650	2,0 - 7,0 (0,5-8,5)	
	450	(4,0 -12,0)	
End stop	400	min. 30	
	500	max. 28	

2.4 Solenoid — max. cut-in voltage xx min. 10 V; rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2 - 3,4
KF	5,7 - 5,9
MS	1,2 - 1,4
SVS	max. 2,0
*FH	1,8-2,4
A XK	22,3 - 24,3
B XL	11,0 - 14,9

Observations

*operating stroke (KSB)

Note VDT-I-460/138

H15

H15

⑥ # Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 STE 4,0 h
1. Edition

VE 4/11 F 110OR 94-1
0 460 414 011

Overflow temperature 45° C

supersedes -
company Steyr
engine WD 411.89

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/. .

Pre-stroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,2 - 5,6	mm		
1.2 Supply-pump pressure	1000	5,2 - 5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	73,5 - 74,5	cm³/1000 strokes		3,0 (4,0)
1.4 Idle regulation	300	11,5- 15,5	cm³/1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	1150	50,0 - 56,0	cm³/1000 strokes		
1.6 Start	100	min. 70	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	1000	1100
	mm	0,8-1,6 (0,5-1,9)	(4,7-6,1)	5,9-6,7 (5,6-7,0)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,8 - 3,4		5,7 - 6,3
Overflow delivery	n = rev/min			1100
	cm³/10 s			55 - 138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1270	max. 2,0		
	1200		(20,5-29,5)	
	1150		(48,5-57,5)	
	1080	72,5-74,5	(70,8-76,2)	
	1000		(71,3-76,7)	
	500	66,0-70,0	(64,6-71,4)	
switch-off				
Idle stop	300		(9,0-18,0)	
	340	min. 1,5		
	400	max. 1,0		
End stop	170	min. 70		
	250	max. 65		

2.4 Solenoid	
	max. cut-in voltage
	test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,5
MS	0,9-1,1
SVS	4,0
A	
B	

Observations

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H16

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 4,0 K
1. Edition

En

Testoil-ISO 4113

VE 4/11 F 1200 R 94-2 (FD 442)
0 460 414 014
Note VDT-I-460/139

Overflow temperature 45° C

supersedes -
company: Steyr
engine: WD 411.45
47 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	800	3,4 - 3,8	mm		
1 2 Supply-pump pressure	800	4,7 - 5,3	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	64,5 - 65,5	cm³/1000 strokes		3,0 (3,5)
1 4 Idle regulation	300	21,0 - 25,0	cm³/1000 strokes		3,0 (4,0)
1 5 Full-speed regulation	1300	19,0 - 25,0	cm³/1000 strokes		
1 6 Start	100	min. 78,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	500	800	1200
	mm	0,7-1,5 (0,4-1,8)	(2,9-4,3)	6,6-7,4 (6,3-7,7)
2 2 Supply pump	n = rev/min	500		1200
	bar (kgf/cm²)	3,2-3,8		6,5-7,1
Overflow delivery	n = rev/min	500		1200
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1340	max. 3,0		
	1300		(17,5-26,5)	
	1250	54,5-61,5	(53,5-62,5)	
	1180	66,5-68,5	(64,9-70,1)	
	800		(62,4-67,6)	
	500	59,5-62,5	(57,6-64,4)	
switch-off				
Idle stop	400	max. 1,5		
	350	5,0-11,0	(3,5-12,5)	
	300		(18,5-27,5)	
End stop	170	min. 78		
	250	min. 60		

2.4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,3
KF	5,3
MS	1,0
SVS	4,0
A	
B	

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

⑥ Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 e
6. Edition
En

VE 4/9 F 2400 R 95 — Overflow temperature 45° C — supersedes 1.84
0 460 494 105 — company: Renault
DHK: 1 688 901 022/130 bar — Test pressure line 6x2x450 mm / 1 680 750 073 — engine: F 8 M

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1400	4,1-4,6	mm		
1 2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	1000	27,8-28,8	cm³/1000 strokes		
1 4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	10,5-16,5	cm³/1000 strokes		
1 6 Start	100	min. 42,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	1400				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min mm	siehe Blatt 2	
2 2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,5-3,1	2400 7,7-8,3
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 6,0	
	2650	(9,5-17,5)	
	2500	21,0-29,0 (21,0-29,0)	
	2400	29,2-31,8 (28,2-32,8)	
	2100	29,9-32,3 (28,8-33,4)	
	1400	27,5-29,5 (26,2-30,8)	
	1000	(26,0-30,6)	
	600	25,7-28,7 (24,2-30,2)	
switch-off	2400	0	
Idle stop	650	max. 1,0	
	600	0,2-5,2	
	425	(4,0-12,0)	
End stop	330	min. 30,0	
	500	max. 29,0	

2 4 Solenoid	max. cut-in voltage [illegible] voltage	xxx min. 10 V rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	2,8
AXK	18,7-20,7
BXL	9,5-12,8

Observations

Please note instructions on sheet 2.

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7.84

H18

2.1 Timing device

n = min/1	mm	Expansion element
600	0,7-1,5 (0,4-1,8)	12 V
1000	2,3-3,1 (2,0-3,4)	12 V
1400	(3,6-5,0)	12 V
2000	6,3-7,1 (6,0-7,4)	12 V
2100	6,7-7,5 (6,4-7,8)	12 V
2400	7,0-7,7 (6,6-8,0)	12 V

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator.
At 300 1/min there must be a timing-device travel of 1.3 - 3.3 mm.

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 IHC 6.6i
3. Edition

Overflow temperature 45° C

supersedes 4.83
company IHC
engine DT 402

VE 6/12 F 1100 R 102
0 460 426 025

DHK 1 688 90i 020
172 + 3 bar

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	600	3,2 - 3,6	mm	0,75	
1 2 Supply-pump pressure	600	5,0 - 5,6	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	800	99,0-100,0	cm³/1000 strokes	0,75	3,5 (4,0)
Full-load delivery without charge-air pressure	600	81,0-83,0	cm³/1000 strokes	0	
1 4 Idle regulation	375	20,0-26,0	cm³/1000 strokes	0	
1 5 Full-speed regulation	1200	33,0-39,0	cm³/1000 strokes	0,75	3,5 (4,5)
1 6 Start	100	min. 95	cm³/1000 strokes	0	
1 7 Load dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	400	600	700
LDA=0,75 bar	mm	1,4-2,1 (1,0-2,4)	(2,7-4,1)	3,6-4,4 (3,3-4,7)
2 2 Supply pump	n = rev/min	400		1100
LDA=0,75 bar	bar (kgf/cm²)	3,9-4,5		7,0 - 7,6
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-125 (40-140)		55-125 (40-140)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1280	max. 1,5		0,75
	1220	min. 2,0		0,75
	1200		(31,0-41,0)	0,75
	1080	95,0-98,0	(93,5-99,5)	0,75
	800		(96,5-102,5)	0,57
	600 *	88,5-90,5	(85,7-93,3)	0,2
	600		(78,2-85,8)	0
switch-off	1100	0		
Idle stop	500	max. 1,5		
	420	min. 2,0		
	375		(18,0-28,0)	
End stop	200	min. 95		
	440	max. 85		

2 4 Solenoid — max. cut-in voltage xx min. 10,0 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,6-5,8
MS	1,5-1,7
SVS	max. 6,0
^{A}X K	20,2-22,2
^{B}X L	10,2-13,5

Observations

* Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

8.84

H20

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,4 d
1. Edition

En

VE 4/10 F 1900 L 106
0 460 404 026

Overflow temperature 45° C

supersedes
company VM Motori
engine HR 492 HT9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	5,1 - 5,5	mm	0,75	
1.2 Supply-pump pressure	1600	5,5 - 6,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1600	47,0 - 48,0	cm³/1000 strokes	0,75	3,0 (3,5)
Full-load delivery without charge-air pressure	1600	31,0 - 34,0	cm³/1000 strokes	0	-
1.4 Idle regulation	350	16,0 - 20,0	cm³/1000 strokes	0	2,5 (3,5)
1.5 Full-speed regulation	1900	43,5 - 46,5	cm³/1000 strokes	0,75	
1.6 Start	100	min. 65	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1600		1900
LDA= 0,75	mm	1,0-1,8 (0,7-2,1)	(4,6-6,0)	6,5-7,5	(6,4-7,8)
2.2 Supply pump	n = rev/min	400			1900
LDA = 0,75	bar (kgf/cm²)	1,5 - 2,1			6,8 - 7,4
Overflow delivery	n = rev/min	500			1900
	cm³/10 s	55-110 (40-125)			55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2100	max. 1,0	0,75
	2050	min. 2,0	0,75
	2030	17,0 - 23,0 (16,0-24,0)	0,75
	1900	(41,0-49,0)	0,75
	1600	(29,8-35,2)	0
	1600	(44,8-50,2)	0,75
	* 750	41,5 - 44,5 (40,0-46,0)	0,90
	600	32,0 - 35,0 (30,5-35,5)	0
switch-off			
Idle stop	350	(14,0-22,0)	
	430	min. 2,5	
	500	max. 1,0	
End stop	350	min. 48	
	450	max. 47,5	

2.4 Solenoid	max. cut-in voltage	xxx min. 10 V
	test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	3,6
A	
B	

Observations

*Manifold-pressure compensator stroke = 4,2 mm

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H21

H21

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 3,6 e

1. Edition

En

VE6/11/F1900L113 — Overflow temperature 45° C

0 460 416 022

supersedes company engine: Motori VM HR 692 HT/9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,2 mm ± 0,02(0,04)

1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	4,7-5,3	mm	0,65	
1 2 Supply-pump pressure	1800	6,6-7,2	bar (kgf/cm²)	0,65	
1 3 Full-load delivery with charge-air pressure	1500	47,5-48,5	cm³/1000 strokes	0,65	3,5 (4,0)
Full-load delivery without charge air pressure	600	36,0-40,0	cm³/1000 strokes	0	
1 4 Idle regulation	450	10,0-14,0	cm³/1000 strokes	0	3,0 (4,0)
1 5 Full-speed regulation	2000	41,0-48,0	cm³/1000 strokes	0,65	
1 6 Start	100	min. 42,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,65 bar	n = rev/min	1000	1500	1800
	mm	2,1-2,9(1,8-3,2)	(4,3-5,7)	6,5-6,9 (6,0-7,4)
2 2 Supply pump	n = rev/min	400		
LDA=0,65 bar	bar (kgf/cm²)	1,7-2,3		
Overflow delivery	n = rev/min	400		1900
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2200	max 1,5	0,65
	2100	14,5-20,5(13,0-22,0)	0,65
	2000	(40,0-49,0)	0,65
	1900	45,2.47,8(43,9-49,1)	0,65
	1500	(45,4-50,6)	0,65
	* 600	38,5-41,5(36,6-43,4)	0,26
	600	(34,6-41,4)	0
switch-off			
Idle stop	700	max. 1,0	
	550	2,0-8,0(0,5-9,5)	
	450	(7,5-16,5)	
End stop	350	min. 40,0	
	450	max. 45,0	

2 4 Solenoid — max cut-in voltage xx min. 10 Volt; test voltage xxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	-
KF	6,4-6,6
MS	0,9-1,1
SVS	2,4
XK	20,2-22,2
XL	11,9-15,2
A	
B	

Observations

*Manifold-pressure compensator stroke = 4,0 mm

H22

⑥

Test Specifications Distributor-type Fuel-injection Pumps

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WPP 001/4 PEU 2,3 k 3
1. Edition

En

Test:ISO 4113

VE 4/9 F 2075 R 126-1
0 460 494 123
DHK: 1 688 901 022/130 bar

Overflow temperature 45° C
Test pressure line
6x2x450 mm / 1 680 750 073

supersedes
company: Peugeot
engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting — mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	5,8-6,2	mm	0,8	
1 2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge air pressure	500	42,8-43,8	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	54,5-55,5	cm³/1000 strokes	0,8	2,5 (3,0)
1 4 Idle regulation	400	17,0-21,0	cm³/1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2350	25,0-31,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 57,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	750	1000	1500	2000
	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2 2 Supply pump	n = rev/min	200	750	2000	
	bar (kgf/cm²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2650	max. 1,0	0,8
	2350	(24,0-32,0)	0,8
	2250	37,0-43,0(36,0-44,0)	0,8
	2000	53,0-55,0(51,7-56,3)	0,8
	1500	(52,7-57,3)	0,8
	1000	52,0-55,0(50,5-56,5)	0,8
	750*	48,7-49,7(46,2-52,2)	0,25
	500	(40,3-46,3)	0
switch-off			
elektr.	400	0	
Idle stop	400	(15,0-23,0)	
	450	4,5-9,5 (3,0-11,0)	
	500	max. 3,5	
End stop	230	min. 60	
	330	max. 60	

2 4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

for assembly and adjustment mm

Designation	
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

H23

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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H23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5 K
1. Edition
En

VE 4/11F 1900 R 127
0 460 414 008
DHK: 1 688 901 023 / 172 + 3 bar
Overflow temperature 45° C

Test pressure line
6x2x450 mm / 1 680 750 073

supersedes –
company: Iveco -Sofim
engine: 8140.21

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1100	4,2 - 4,6	mm	0,8	
1 2 Supply-pump pressure	1100	5,3 - 5,9	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge-air pressure	1100	45,5 - 46,5	cm³/1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	600	35,5 - 36,5	cm³/1000 strokes	0	
1 4 Idle regulation	400	13,0 - 17,0	cm³/1000 strokes	0	3,0 (4,0)
1 5 Full-speed regulation	2200	18,0 - 24,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 60	cm³/1000 strokes	0	
1 7 Load-dependent port closing	1100	-		0,8	

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	800	1100	1500	1900
LDA = 0,8 bar	mm	2,4-3,2 (2,1-3,5)	(3,7-5,1)	5,8-6,6(5,5-6,9)	7,6-8,4(7,3-8,7
2 2 Supply pump	n = rev/min	600		1900	
LDA = 0,8 bar	bar (kgf/cm²)	3,8 - 4,4		7,5 - 8,1	
Overflow delivery	n = rev/min	600		1900	
	cm³/10 s	5,5-138 (40-153)		55-138 (40-159)	

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2350	max. 10,0		0,8
	2200		(16,5-25,5)	0,8
	2000	30,0-38,0	(29,5-38,5)	0,8
	1900	40,15-42,65	(38,8-44,0)	0,8
	1500	42,75-45,25	(41,4-46,6)	0,8
	1100		(43,4-48,6)	0,8
	* 800	36,5-37,5	(34,4-39,6)	0,3
	600		(32,6-39,4)	0
switch-off				
Idle stop	550	max. 2,0		
	400		(10,5-19,5)	
	350	27,0-33,0	(25,5-34,5)	
End stop	200	min. 55		
	350	max. 55		

2 4 Solenoid — max. cut-in voltage xxx min. 10 Volt
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	-
KF	5,2-5,4
MS	0,9-1,1
SVS	4,6
A	
B	

Observations

*Manifold-pressure compensator stroke = 6,2 mm

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8.84

H24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 h
3. Edition
En 2.84

Tastoil-ISO 4113

VE 4/9 F 2100 R 130 Overflow temperature 45° C

supersedes REN
company:
engine: I8S-234

0 460 494 128

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1400	4,0-4,4	mm	0,8	
1 2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge-air pressure	1400	46,7-47,7	cm³/1000 strokes	0,8	(2,5 (3,0)
Full-load delivery without charge-air pressure	600	29,5-30,5	cm³/1000 strokes	0	
1 4 Idle regulation	375	4,0-8,0	cm³/1000 strokes	0	2,5 (3,0)
1 5 Full-speed regulation	2300	18,0-24,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 50,0	cm³/1000 strokes	0	
1 7 Load dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1400	1800	2000
	mm	1,9-2,7(1,6-3,0)	(3,5-4,9) 5,8-6,6	(5,5-6,9)	6,1-6,9(5,8-7,2)
2 2 Supply pump	n = rev/min	400		1800	
	bar (kgf/cm²)	1,9-2,5		6,3-6,9	
Overflow delivery	n = rev/min	500		2100	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2600	max. 2,0		0,8
	2400	max. 14,0		0,8
	2300		(17,0-25,0)	0,8
	2000	39,9-42,9	(39,1-43,7)	0,8
	1400		(44,9-49,5)	0,8
	1000	42,6-45,6	(41,1-47,1)	0,8
	700 *	35,3-36,3	(33,5-38,1)	0,2
	600		(27,7-32,3)	
switch-off elektr.	400	0		
Idle stop	350	9,0-13,0	(7,0-15,0)	
	375		(2,0-10,0)	
	480	max. 2,0		
End stop	170	min. 40		
	300	max. 40		

2 4 Solenoid — max. cut-in voltage xxxx min. 10 V
test voltage xxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	5,5
A XK	20,2-22,2
B XL	7,7-11,0

Observations

Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

J1

Test Specifications Distributor-type Fuel-injection Pumps

WPF 001/4 REN 2,0 m
1. Edition
En

VE 4/9 F 2100 R 130 - 1 Overflow temperature 45° C
0 460 494 157

supersedes -
company: Renault
engine: I 8 S 234 Turbo

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,0 - 4,4	mm	0,8	
1.2 Supply-pump pressure	1400	5,1 - 5,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1400	46,7-47,7	cm³/1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	600	29,5-30,5	cm³/1000 strokes	0	
1.4 Idle regulation	375	4,0-8,0	cm³/1000 strokes	0	2,5 (3,0)
1.5 Full-speed regulation	2300	18,0-24,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 50	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	1800	2000
LDA = 0,8 bar	mm	1,9-2,7 (1,6-3,0)	(3,5-4,9)	5,8-6,6 (5,5-6,9)	6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min	400		1800	
LDA = 0,8 bar	bar (kgf/cm²)	1,9 - 2,5		6,3 - 6,9	
Overflow delivery	n = rev/min	500		2100	
	cm³/10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 2,0		0,8
	2400	max. 14,0		0,8
	2300		(17,0 - 25,0)	0,8
	2000	39,9-42,9	(39,1- 43,7)	0,8
	1400		(44,9 - 49,5)	0,8
	1000	42,6-45,6	(41,1- 47,1)	0,8
	* 700	35,3-36,3	(33,5 - 38,1)	0,2
	600		(27,7 - 32,3)	0
switch-off				
elektr.	400	0		
Idle stop	350	9,0 - 13,0	(7,0 - 15,0)	
	375		(2,0 - 10,0)	
	480	max. 2,0		
End stop	170	min. 40		
	900	max. 40		

2.4 Solenoid

max. cut-in voltage xx min. 10 V
test voltage xxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,1 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	3,6
A	
B	

Observations

*Manifold-pressure compensator stroke = 4,5 mm

J2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 V 5
3. Edition
En

Testoil-ISO 4113

VE 4/9 F 2250 R 134-1
0 460 494 134

Overflow temperature 45° C

supersedes 12.83
company: VWW
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air pres. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	3,3-3,7	mm	0,75	
1 2 Supply-pump pressure	1500	4,6-5,2	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	1500	42,5-43,5	cm³/1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5-23,5	cm³/1000 strokes	0	
1 4 Idle regulation	450	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75	
1 6 Start	100	min. 35	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2 2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm²)	2,5 - 3,1		6,5-7,1
Overflow delivery	n = rev/min	600		2250 (0,75 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	37,5-39,5	(36,2-40,8)	0,75
	1500		(40,8-45,2)	0,75
	1000 *	32,5-33,5	(30,8-35,2)	0,3
	600		(20,0-26,0)	0
switch-off				
mech.	2250	0		
elektr.	400	0		
Idle stop	450		(4,0-12,0)	
	1200	max. 9,0		
End stop	400	min. 21,0		
	500	max. 29,0		

2 4 Solenoid — max. cut-in voltage xxx min. 10,0 V
test voltage rated voltage 12V.
XXXXXXXXX

3. Dimensions

Designation	for assembly and adjustment mm
K	
KF	3,2 - 3,4
	5,7 - 6,0
MS	1,2 - 1,4
SVS	5,7
A	
XK	18,4 - 20,4
XL	10,1- 13,5

Observations

Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 V 6
3. Edition

En

Testöl-ISO 4113

VE 4/9 F 2250 R 134-2
0 460 494 135

Overflow temperature 45° C

supersedes 12.83
company: VWW
engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,3 - 3,7	mm	0,75 bar	
1.2 Supply-pump pressure	1500	4,6 - 5,2	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	42,5 - 43,5	cm³/1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	600	22,5 - 23,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0 - 10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2525	9,0 - 15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
LDA = 0,75 bar	mm	1,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA = 0,75 bar	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min	600		2250
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	37,5-39,5	(36,2-40,8)	0,75
	1500		(40,8-45,2)	0,75
	* 1000	32,5-33,5	(30,8-35,2)	0,3
	600		(20,0-26,0)	0
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1200	max. 4,0		
End stop	400	min. 21,0		
	500	max. 29,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
test voltage xxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,2 - 1,4
SVS	3,2
A XK	18,4 - 20,4
B XL	9,4 - 12,4

Observations

Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

J4

J4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 n
1. Edition
En

VE 6/10 F 2400 L 135
0 460 406 026

As of FD 444 note page 2.

supersedes
company VWW
engine: 087T - V01

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,5- 1,9	mm	1,3	
1.2 Supply-pump pressure	1500	5,7- 6,3	bar (kgf/cm²)	1,3	
1.3 Full-load delivery with charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	1,3	2,5(3,0)
Full-load delivery without charge-air pressure	700	24,0-25,0	cm³/1000 strokes	0	
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes	0	2,0(3,0)
1.5 Full-speed regulation	2675	10,0-16,0	cm³/1000 strokes	1,3	
1.6 Start	100	min. 42,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	siehe Blatt 2		
2.2 Supply pump ALDA=1,3 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,9	1500* 6,8-7,4	2400 7,8-8,4
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2825	max. 6,0		1,3
	2675		(9,0-17,0)	1,3
	2400	35,0-37,0	(33,7-38,3)	1,3
	1500		(42,2-46,8)	1,3
	1000	37,0-38,0	(35,2-39,8)	0,7
	700		(21,5-27,5)	0
	600 **	21,2-24,8	(20,0-26,0)	0,4
switch-off				
elektr.	400	0		
Idle stop	750	max. 3,0		
	415		(4,0-12,0)	
End stop	400	min. 16,0		
	500	max. 26,0		

2.4 Solenoid — max. cut-in voltage xx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max. 5,9
A	
B	

Observations

Please note instructions on sheet 2 -

04.84

2.1 Timing device

n = min^{-1}	ALDA	Solenoid valve	mm
1200	1.3 bar	12 V	0.0-0.8 (0.0-1.1)
1200	1.3 bar	0 V	1.5-2.7 (1.4-2.8)
1500	1.3 bar	12 V	(1.0-2.4)
1500	1.3 bar	0 V	3.2-4.2 (3.0-4.4)
2400	1.3 bar	12 V	5.4-6.2 (5.1-6.5)

Adjust EGR with a gauge

n = min^{-1}	ALDA	Solenoid valve	Fuel delivery cm³ / 1000 strokes
1000	0 bar	12 V	13.0-15.0

as of FD 444:

2.3 Fuel deliveries

n = min^{-1}	ALDA	Fuel delivery cm³ / 1000 strokes
2825	1.3	max. 6.0
2675	1.3	10.0-16.0 (9.0-17.0)
2400	1.3	35.0-37.0 (33.7-38.3)
1500	1.3	44.0-45.0 (42.2-46.8)
1000**	0.7	37.0-38.0 (35.2-39.8)
600	0	25.5-26.5 (23.0-29.0)

End stop

n = min^{-1}	ALDA	Fuel delivery cm³ / 1000 strokes
400	0	min. 20.0
500	0	max. 30.0

** ALDA-stroke = 7.5 mm

* 0 V at the solenoid valve. Do not activate the cold-start accelerator lever when checking starting fuel delivery.

J6

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 n 1
1. Edition

En

VE 6/10 F 2400 L 135 - 1
0 460 406 028 As of FD 444 note page 2.

supersedes
company VW
engine: 087 T - Vol

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	1,5- 1,9	mm	1,3	
1 2 Supply-pump pressure	1500	5,7- 6,3	bar (kgf/cm²)	1,3	
1 3 Full-load delivery with charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	1,3	2,5 (3,0)
Full-load delivery without charge-air pressure	700	24,0-25,0	cm³/1000 strokes	0	
1 4 Idle regulation	415	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2675	10,0-16,0	cm³/1000 strokes	1,3	
1 6 Start	100	min. 42,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min mm	siehe Blatt 2		
2 2 Supply pump ALDA=1,3 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,9	1500* 6,8-7,4	2400 7,8-8,4
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)	2400 55-138 (40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2825	max. 6,0	1,3
	2675	(9,0-17,0)	1,3
	2400	35,0-37,0(33,7-38,3)	1,3
	1500	(42,2-46,8)	1,3
	1000	37,0-38,0(35,2-39,8)	0,7
	700	(21,5-27,5)	0
	600**	21,2-24,8(20,0-26,0)	0,4
switch-off			
elektr.	400	0	
mech.	2400	0	
Idle stop	750	max. 3,0	
	415	(4,0-12,0)	
End stop	400	min. 16,0	
	500	max. 26,0	

2 4 Solenoid	max. cut-in voltage	xxx min. 10 V
	[illegible]xxx	rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.5,9
A	
B	

Observations

Please note instructions on sheet 2

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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04.84

J7

2.1 Timing device

n = min^{-1}	ALDA	Solenoid valve	mm
1200	1.3 bar	12 V	0.0-0.8 (0.0-1.1)
1200	1.3 bar	0 V	1.5-2.7 (1.4-2.8)
1500	1.3 bar	12 V	(1.0-2.4)
1500	1.3 bar	0 V	3.2-4.2 (3.0-4.4)
2400	1.3 bar	12 V	5.4-6.2 (5.1-6.5)

Adjust EGR with a gauge

n = min^{-1}	ALDA	Solenoid valve	Fuel delivery cm³ / 1000 strokes
1000	0 bar	12 V	13.0-15.0

as of FD 444:

2.3 Fuel deliveries

n = min^{-1}	ALDA	Fuel delivery cm³ / 1000 strokes
2825	1.3	max. 6.0
2675	1.3	10.0-16.0 (9.0-17.0)
2400	1.3	35.0-37.0 (33.7-38.3)
1500	1.3	44.0-45.0 (42.2-46.8)
1000**	0.7	37.0-38.0 (35.2-39.8)
600	0	25.5-26.5 (23.0-29.0)

End stop

n = min^{-1}	ALDA	Fuel delivery cm³ / 1000 strokes
400	0	min. 20.0
500	0	max. 30.0

** ALDA-stroke = 7.5 mm

* 0 V at the solenoid valve. Do not activate the cold-start accelerator lever when checking starting fuel delivery.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 VWW 1,6 W8

1. Edition

Testöl ISO 4113

VE 4/9 F 2400 R 136-1
0 460 494 166

Overflow temperature 45° C

supersedes
company: VW
engine: 086-1,6 L

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500 1500	2,4-2,8 4,3-4,9	mm		
1.2 Supply-pump pressure			bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1500	32,0-33,0	cm³/1000 strokes		2,5 (3,0)
1.4 Idle regulation	450	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2600	11,0-17,0	cm³/1000 strokes		
1.6 Start	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,6-1,4(0,3-1,7)	(1,9-3,3)	5,8-6,6 (5,5-6,9)
2.2 Supply pump	n = rev/min	600	2400	
	bar (kgf/cm²)	2,2-2,8	6,4-7,0	
Overflow delivery	n = rev/min	600	2400	
	cm³/10 s	44-138(40-153)	55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0		
	2600		(10,0-18,0)	
	2400	27,3-29,3		
	1500		(30,2-34,8)	
	600	21,5-24,5	(20,0-26,0)	
switch-off elektr.	400	0		
Idle stop	1200	max. 6,0		
	600	max. 7,0		
	450		(4,0-10,0)	
End stop	400	min. 18		
	500	max. 23,5		

2.4 Solenoid: max. cut-in voltage xxx min. 10 V; test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,3
KF	5,7-5,9
MS	1,3-1,5
SVS	2,5
A	
B	

Observations

J9

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0 i 3

2. Edition

En

Test Oil ISO 4113

VE 5/10 F 2400 L 137 Overflow temperature 45° C

0 460 405 030

supersedes 7.83
company: VWW
engine: 153

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1400	2,4-2,8	mm		
1 2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	35,0-36,0	cm³/1000 strokes		2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	6,0-12,0	cm³/1000 strokes		
1 6 Start	100	min. 50,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1 (1,0-2,4)	(1,9-3,3)	5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2650	(5,0-13,0)	
	2400	29,5-31,5 (28,3-32,7)	
	1400	(33,3-37,7)	
	750	25,0-28,0 (24,2-28,8)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min. 16,5	
	500	max. 23,5	

2.4 Solenoid — max. cut-in voltage xx min. 10,0 V; xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J10

J10

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 i 2

2. Edition

En

fastoil-ISO 4113

VE 5/10 F 2400 L 137-1 Overflow temperature 45° C

supersedes 7.83
company VWW
engine 153

0 460 405 032

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1400	2,4-2,8	mm		
1 2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1400	35,0-36,0	cm³/1000 strokes		2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	2650	6,0-12,0	cm³/1000 strokes		
1 6 Start	100	min. 50,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1400	2400
	mm	1,3-2,1 (1,0-2,4)	(1,9-3,3)	5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 3,0	
	2650	(5,0-13,0)	
	2400	29,5-31,5 (28,3-32,7)	
	1400	(33,3-37,7)	
	750	25,0-28,0 (24,2-28,8)	
switch-off	2400	0	
mech.			
elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min. 16,5	
	500	max. 23,5	

2 4 Solenoid — max. cut-in voltage xxx min. 10,0 V; test voltage xxxxxxxx rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 3,9 y
3. Edition
En

VE 4/11 F 1150 R 140 Overflow temperature 45° C
0 460 414 009
DHK 1 688 901 020

supersedes 4.84
company: IHC
engine: DT 239/856

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	800	4,5 - 4,9	mm	0,8	
1 2 Supply-pump pressure	800	5,3 - 5,9	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge-air pressure	800	92,2 - 93,2	cm³/1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	500	75,5 - 77,5	cm³/1000 strokes	0	
1 4 Idle regulation	350	23,0 - 27,0	cm³/1000 strokes	0	3,5 (4,0)
1 5 Full-speed regulation	1250	42,0 - 48,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 100	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA = 0,8 bar	n = rev/min	400	800	1150
	mm	0,8-1,6 (0,5-1,9)	(4,0 - 5,4)	5,3 - 6,1 (5,0 - 6,4)
2 2 Supply pump LDA = 0,8 bar	n = rev/min	400		1150
	bar (kgf/cm²)	3.7 - 4,3		6,4 - 7,0
Overflow delivery	n = rev/min	500		1150
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1300	max. 2,5		0,8
	1270	min. 2,5		0,8
	1250		(40,5 - 49,5)	0,8
	1130	85,4 - 88,4	(84,2-89,6)	0,8
	800		(90,0-95,4)	0,8
	800 *	86,4-90,4	(85,7-91,1)	0,3
	500	83,5-84,5	(80,6-87,4)	0,23
	500		(73,1-79,9)	0
switch-off				
Idle stop	350		(20,5-29,5)	
	400	5,0-11,0	(3,5-12,5)	
	450	max. 3,0		
End stop	220	min. 100		
	300	max. 80		

2.4 Solenoid — max. cut-in voltage xx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	-
KF	5,2 - 5,4
MS	1,2 - 1,4
SVS	5,0
A K	20,2 - 22,2
B X L	12,3 - 15,7

Observations
*Manifold-pressure compensator stroke = 4,9 mm
Correction at the adjusting nut. (46)

J12

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 VWW 2,4 l

3. Edition

12.83

VE 6/10 F 2400 L 144

0 460 406 029

Overflow temperature 45° C

supersedes

company: VWW

engine: 087 T

Different test specs with restriction bore 0.86 mm. See Page 2.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,2-1,6	mm	0,75	
1.2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2600	10,0-16,0	cm³/1000 strokes	0,75	
1.6 Start	100	min. 42	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	See Page 2 (without restriction bore)	
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,9	2400 7,8 - 8,4
Overflow delivery	n = rev/min cm³/10 s	600 (0 bar) 55-138(40-153)	2400 (0,75 bar) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max. 4,0		0,75
	2600		(9,0-17,0)	0,75
	2400	35,0-37,0	(33,7-38,3)	0,75
	1500		(42,2-46,8)	0,75
	800**	32,5-33,5	(30,0-36,0)	0,3
	600		(23,0-29,0)	0
switch-off elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 20		
	500	max. 30		

2.4 Solenoid: max. cut-in voltage xxx min. 10 V
xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.6,0
LDA-Hub**	5,3
A XK	21,8-23,8
B XL	8,9-12,3

Observations

J13

6.84

J13

Timing device

n = min^{-1}	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	1.2-1.6 (0.7-2.1)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.6-4.4 (3.3-4.7)
2000	0 Volt	0.75	4.9-6.1 (4.8-6.2)
2400	12 Volt	0.75	5.6-6.4 (5.3-6.7)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar

Differing test specifications for solenoid valve with throttle bore

Timing device

n = min^{-1}	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	0.8-1.2 (0.3-1.7)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.1-3.9 (2.8-4.2)
2000	0 Volt	0.75	5.8-7.0 (5.7-7.1)
2400	12 Volt	0.75	5.0-5.8 (4.7-6.1)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar

Idle

415 min^{-1}	6.0-10.0 (4.0-12.0) ccm/1000 str.
750 min^{-1}	max. 3.0

Full load

2850 min^{-1}	max. 4.0 ccm/1000 str.
2675 min^{-1}	10.0-16.0(9.0-17.0) ccm/1000 str.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 l 1
3. Edition
En

VE 6/10 F 2400 L 144-1 Overflow temperature 45° C
0 460 406 030

supersedes 12.83
company VWW
engine 087 T

Different test specs with restriction bore 0.86 mm. See Page 2.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	1,2-1,6	mm	0,75	
1 2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	600	25,5-26,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	375	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2600	10,0-16,0	cm³/1000 strokes	0,75	
1 6 Start	100	min. 42	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	–	–			

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,75 bar	n = rev/min mm	See Page 2 (without restriction bore)	
2 2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,9	2400 8,1-8,7
Overflow delivery	n = rev/min cm³/10 s	600 (0 bar) 55-138(40-153)	2400 (0,75 bar) 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2750	max. 4,0		0,75
	2600		(9,0-17,0)	0,75
	2400	35,0-37,0	(33,7-38,3)	0,75
	1500		(42,2-46,8)	0,75
	800**	32,5-33,5	(30,0-36,0)	0,3
	600		(23,0-29,0)	0
switch-off				
mech.	2400	0		
elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 3,0		
End stop	400	min. 20		
	500	max. 30		

2 4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max.6,0
LDA-Hub**	5,3
A XK	21,8-23,8
B XL	8,9-12,3

Observations

J15

Timing device

n = min^{-1}	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	1.2-1.6 (0.7-2.1)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.6-4.4 (3.3-4.7)
2000	0 Volt	0.75	4.9-6.1 (4.8-6.2)
2400	12 Volt	0.75	5.6-6.4 (5.3-6.7)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar

Differing test specifications for solenoid valve with throttle bore

Timing device

n = min^{-1}	Solenoid valve	manifold-pressure compensator	mm
1500	12 Volt	0.75	0.8-1.2 (0.3-1.7)
1500	0 Volt	0.75	3.0-4.0 (2.8-4.2)
2000	12 Volt	0.75	3.1-3.9 (2.8-4.2)
2000	0 Volt	0.75	5.8-7.0 (5.7-7.1)
2400	12 Volt	0.75	5.0-5.8 (4.7-6.1)

Supply pump

1500	0 Volt	0.75	6.8-7.4 bar

Idle

415 min^{-1}	6.0-10.0 (4.0-12.0)	ccm/1000 str.
750 min^{-1}	max. 3.0	

Full load

2850 min^{-1}	max. 4.0	ccm/1000 str.
2675 min^{-1}	10.0-16.0(9.0-17.0)	ccm/1000 str.

J16

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 1 3

2. Edition

En

VE 6/10 F 2400 L 146 — Overflow temperature 45° C

0 460 406 033

	10.83
supersedes	
company:	VWW
engine:	087

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting mm

1. Settings

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	100	min. 35	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	750	750	1500	1500	2400
	mm	0,2-1,0(0-1,3)	(*)	(2,3-3,7)	(*)	5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min	600		1500		2400
	bar (kgf/cm²)	2,8-3,4		(*)		7,7-8,3
Overflow delivery	n = rev/min	600				2400
	cm³/10 s	55-138 (40-153)				55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2825	max. 3,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,3)	
	750	26,0-29,0 (24,5-30,5)	
switch-off elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	600	max. 4,0	
End stop	400	min. 20	
	500	max. 25	
2.4 Solenoid	max cut-in voltage xxx min. 10 V test voltage xxxxxxxx rated voltage 12V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A XK	21,8-23,8
B XL	8,9-12,3

Observations

Please note instructions on sheet 2

6.84

J17

BOSCH
Geschäftsbereich KH Kundendienst Kfz Ausrüstung

Timing device

n = min^{-1}	Solenoid valve	mm
750	0 Volt	1.2-2.4 (1.1-2.5)
1500	0 Volt	3.7-4.7 (3.5-4.9)

Supply pump

1500	0 Volt	6.3-6.9 bar

As of FD 445

Timing device

n = min^{-1}	Solenoid valve	mm
1000	12 Volt	0.6-1.4 (0.3-1.7)
1000	0 Volt	1.8-3.0 (1.7-3.1)
1500	12 Volt	2.8-3.2 (2.3-3.7)
1500	0 Volt	4.1-5.1 (3.9-5.3)
2400	12 Volt	6.0-6.8 (5.7-7.1)

Supply pump

1500	0 Volt	6.6-7.2 bar

* Do not apply any voltage to the solenoid valve at the points so marked.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 I 2
2. Edition

En

VE 6/10 F 2400 L 146-1
0 460 406 034

Overflow temperature 45° C

supersedes 10.83
company VWW
engine: 087

Testoil

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	2,8-3,2	mm		
1 2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	–	–	cm³/1000 strokes		
1 4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,0 (3,0)
1 5 Full-speed regulation	100	min. 35	cm³/1000 strokes		
1 6 Start	2700	6,0-12,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	750		750	1500		1500	2400	
	mm	0,2-1,0	(0-1,3)	(*)	(2,3-3,7)		(*)	5,7-6,5	(5,4-6,8)
2 2 Supply pump	n = rev/min	600			1500		2400		
	bar (kgf/cm²)	2,8-3,4			(*)		7,7-8,3		
Overflow delivery	n = rev/min	600					2400		
	cm³/10 s	55-138	(40-153)				55-138	(40-153)	

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2825	max. 3,0		
	2700		(5,0-13,0)	
	2400	22,0-24,0	(20,7-25,3)	
	1500		(26,7-31,3)	
	750	26,0-29,0	(24,5-30,5)	
switch-off				
mech.	2400	0		
elektr.	400	0		
Idle stop	375		(4,0-12,0)	
	600	max. 4,0		
End stop	400	min. 20		
	500	max. 25		

2 4 Solenoid	max. cut-in voltage	xxx min. 10 V
	test voltage	xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A XK	21,8-23,8
B XL	8,9-12,3

Observations

Please note instructions on sheet 2

J19

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

6.84

Timing device

n = min^{-1}	Solenoid valve	mm
750	0 Volt	1.2-2.4 (1.1-2.5)
1500	0 Volt	3.7-4.7 (3.5-4.9)

Supply pump

1500 *	0 Volt	6.3-6.9 bar

As of FD 445

Timing device

n = min^{-1}	Solenoid valve	mm
1000	12 Volt	0.6-1.4 (0.3-1.7)
1000	0 Volt	1.8-3.0 (1.7-3.1)
1500	12 Volt	2.8-3.2 (2.3-3.7)
1500	0 Volt	4.1-5.1 (3.9-5.3)
2400	12 Volt	6.0-6.8 (5.7-7.1)

Supply pump

1500	0 Volt	6.6-7.2 bar

* Do not apply any voltage to the solenoid valve at the points so marked.

J20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 3

3. Edition En

Test-ISO 4113

VE 4/9 F 2250 R 149
0 460 494 138

Overflow temperature 45° C

supersedes 3.84
company VWW
engine 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting – mm

1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1500	3,8-4,2	mm	0,75	
1 2 Supply-pump pressure	1500	4,6-5,2	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	2,5 (3,0)
1 4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	2,0 (3,0)
1 5 Full-speed regulation	2525	9,0-15,0	cm³/1000 strokes	0,75	
1 6 Start	100	min. 35,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	1000	1500	2250
	mm	1,8-2,6 (1,5-2,9)	(3,3-4,7)	6,1-6,9 (5,8-7,2)
LDA=0,75 bar 2 2 Supply pump	n = rev/min	600		2250
	bar (kgf/cm²)	2,5-3,1		6,5-7,1
LDA=0,75 bar Overflow delivery	n = rev/min	600		2250 (0,75 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2750	max. 3,0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,0-39,0	(36,7-41,3)	0,75
	1500		(41,8-46,2)	0,75
	1000 *	33,5-34,5	(31,8-36,2)	0,3
	600		(21,0-27,0)	0
switch-off elektr.	400	0		
Idle stop	475		(4,0-12,0)	
	1200	max. 5,0		
End stop	400	min. 22,0		
	500	max. 30,0		

2 4 Solenoid

max. cut-in voltage xxxxxxxxxxxxxxx min. 10,0 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	4,4
** FH	1,8-2,4
XK	18,4-20,4
XL	8,6-12,0
A	
B	

Observations

* Manifold-pressure compensator stroke = 4,0 mm
Correction at the adjusting nut. (46)

*operating stroke (KSB)

J21

J21

⑥ # Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 CUM 5,9 i

1. Edition

VE 6/12 F 1250 R 159-1
0 460 426 041
DHK: 1 688 901 016/207 +3bar
Overflow temperature 45° C

supersedes Cummins
company 6 BT-590
engine 114 kW bei 2500 1/min

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,3 - 0,02 (0,04) mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	3,1-3,5	mm		
1.2 Supply-pump pressure	750	3,6-4,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	1100	80,0-81,0	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	22,0-28,0	cm³/1000 strokes		3,0 (4,5)
1.5 Full-speed regulation	1300	54,5-62,5	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	750	1100
	mm	1,1-1,9 (0,8-2,2)	(2,6-4,0)	5,0-5,8 (4,7-6,1)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,5-3,1		5,1-5,7
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1390	max. 1,5	
	1300	(53,5-63,5)	
	1250	75,0-78,0 (73,5-79,5)	
	1100	(77,5-83,5)	
	750	84,5-88,5 (82,8-90,2)	
	500	81,5-85,5 (79,8-87,2)	
switch-off ELAB	375		
Idle stop	300	45,0-53,0 (44,0-54,0)	
	375	(20,0-30,0)	
	450	max. 1,5	
End stop	130	min. 97,0	
	200	max. 85,0	

2.4 Solenoid	max. cut-in voltage	
	test voltage	

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
AXK	20,2-22,2
BXL	11,0-14,4

Observations

Pulling electro-magnet 24 V

J22

8.84

J22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CDC 5,9 a
1. Edition
En

VE 6/12 F 1100 R 159-2
0 460 426 042
DHK 1688 901 016/207 + 3 bar

Overflow temperature 45° C

supersedes –
company CDC
engine 6 BT 590-106 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,3 mm ±0,02 (0,04)

1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	750	3,1-3,5	mm		
1 2 Supply-pump pressure	750	3,6-4,2	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	–		cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	82,0-83,0	cm³/1000 strokes		4,0 (4,5)
1 4 Idle regulation	375	22,0-28,0	cm³/1000 strokes		3,5 (4,5)
1 5 Full speed regulation	1220	34,0-40,0	cm³/1000 strokes		
1 6 Start	100	min. 97	cm³/1000 strokes		
1 7 Load dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	500	750	1100
	mm	1,2-2,0 (0,9-2,3)	(2,6-4,0)	5,1-5,9 (4,8-6,2)
2 2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	2,6-3,2		5,0-5,6
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1280	max. 1,5	
	1250	6,0-14,0 (5,0-15,0)	
	1220	(32,0-42,0)	
	1100	75,0-78,0 (73,5-79,5)	
	900	(79,5-85,5)	
	750	81,0-85,0 (80,0-86,0)	
	500	79,0-83,0 (77,3-84,7)	
switch-off			
Idle stop	300	47,0-55,0 (46,0-56,0)	°
	375	(20,0-30,0)	
	450	max. 1,5	
End stop	130	min. 97	
	200	max. 85	

2 4 Solenoid — max cut-in voltage xxx min. 10 V
test voltage xxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	5,1-5,4
MS	1,4-1,6
SVS	1,2
A XK	20,2-22,2
B XL	10,7-14,1

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 f
1. Edition

En

VE 6/12 F 1100 R 159-8 Overflow temperature 45° C
0 460 426 050
DHK: 1 688 901 016/207+3 bar

supersedes company Cummins engine 6 BT - 590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre stroke setting 0,3 mm ±0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	750	3,1-3,5	mm		
1 2 Supply-pump pressure	750	3,7-4,3	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full load delivery without charge-air pressure	900	73,0-74,0	cm³/1000 strokes		4,0 (4,5)
1 4 Idle regulation	375	18,5-24,5	cm³/1000 strokes		3,5 (4,5)
1 5 Full speed regulation	1175	28,0-34,0	cm³/1000 strokes		
1 6 Start	100	min. 97,0	cm³/1000 strokes		
1 7 Load dependent port closing					

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	400	750	1100
	mm	0,3-1,1 (0-1,4)	(2,6-4,0)	5,4-6,2 (5,1-6,5)
2 2 Supply pump	n = rev/min	400		1100
	bar (kgf/cm²)	2,2-2,8		5,2-5,8
Overflow delivery	n = rev/min	400		1100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	1250	max. 1,5	
	1175	(26,0-36,0)	
	1100	66,0-69,0 (64,5-70,5)	
	900	(70,5-76,5)	
	750	74,5-78,5 (72,8-80,2)	
	400	88,0-92,0 (86,3-93,7)	
switch-off ELAB	375	0	
Idle stop	300	47,0-55,0 (46,0-56,0)	
	375	(16,5-26,5)	
	450	max. 1,5	
End stop	130	min. 97	
	200	max. 90	

2 4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

J24

J24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 5,9 K
1. Edition

En

VE 6/12 F 1000 R 159-10 Overflow temperature 45° C
0 460 426 052
Nozzle-and-holder assembly 1 683 901 016/207 ± 3 bar

supersedes -
company: Cummins
engine: 6 BT 5.9
65 kW / 2000 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	4,0-4,4	mm		
1.2 Supply-pump pressure	750	4,1-4,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	53,0-54,0	cm³/1000 strokes		4,0(4,5)
1.4 Idle regulation	375	27,0-33,0	cm³/1000 strokes		3,5(4,5)
1.5 Full-speed regulation	1050	28,0-34,0	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	750	1000
	mm	1,4-2,2 (1,1-2,5)	(3,5-4,9)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	400		1000
	bar (kgf/cm²)	2,5-3,1		5,2-5,8
Overflow delivery	n = rev/min	400		1000
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1100	max. 1,5	
	1050	(26,0-36,0)	
	1000	48,5-51,5 (47,0-53,0)	
	900	(50,5-56,5)	
	750	53,5-57,5 (51,8-59,2)	
	400	50,0-54,0 (48,3-55,7)	
switch-off			
ELAB	375		
Idle stop	375	(25,0-35,0)	
	400	10,5-18,5 (9,5-19,5)	
	450	max. 1,5	
End stop	130	min. 97	
	200	max. 85	

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

24 V Pulling electromagnet

K1

Test Specifications Distributor-type Fuel-injection Pumps

WPP001/4 CUM 5,9 h
1.Edition
En

VE 6/12 F 1000 R 159-11 Overflow temperature 45° C
0 460 426 053
Nozzle-and-holder assembly 1 688 901 016/207 + 3 bar

supersedes -
company: Cummins
engine: 6 BT 590
65 kW / 2000 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	4,0-4,4	mm		
1.2 Supply-pump pressure	750	4,1-4,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	900	53,0-54,0	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	27,0-33,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1050	28,0-34,0	cm³/1000 strokes		
1.6 Start	100	min. 97,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	750	1000
	mm	1,4-2,2 (1,1-2,5)	(3,5-4,9)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	400		1000
	bar (kgf/cm²)	2,5-3,1		5,2-5,8
Overflow delivery	n = rev/min	400		1000
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1100	max. 1,5	
	1050	(26,0-36,0)	
	1000	48,5-51,5 (47,0-53,0)	
	900	(50,5-56,5)	
	750	53,4-57,5 (51,8-59,2)	
	400	50,0-54,0 (48,3-55,7)	
switch-off ELAB	375		
Idle stop	375	(25,0-35,0)	
	400	10,5-18,5 (9,5-19,5)	
	450	max. 1,5	
End stop	130	min. 97	
	200	max. 85	

2.4 Solenoid — cut-in voltage min. 10V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

K2

K 2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,9 b
2. Edition
En

0 460 494 153

VE 4/9 F 2300 R 162

DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

superseded 03.84
company: Peugeot
engine: XUD 9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	2000	7,8- 8,2	mm		
1 2 Supply-pump pressure	1250	3,9- 4,5	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure *	1250	28,8-29,8	cm³/1000 strokes		2,5(3,0)
1 4 Idle regulation	A 550	3,5- 4,5	cm³/1000 strokes		B 2,5(3,0)
1 5 Full-speed regulation	2400	19,3-25,3	cm³/1000 strokes		
1 6 Start	100	min. 44,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	700	1250	2000
	mm	0,5-1,5(0,3-1,7)	3,4-4,2(3,1-4,5)	(7,3-8,7)
2 2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,3-2,9		5,9-6,5
Overflow delivery	n = rev/min	600		2300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	10,7-16,7 (9,7-17,7)	
	2400	(18,3-26,3)	
	2250	28,9-30,9 (27,6-32,2)	
	2000	29,7-31,7 (28,4-33,0)	
	1250	(27,0-31,6)	
	700	29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550	3,5- 4,5	
	B 350	8,0-12,0 (6,0-14,0)	
	C 470	8,0-12,0 (6,0-14,0)	
End stop	200	min. 40,0	
	300	max. 35,0	

2 4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations
Residual delivery setting idle setting (LFG) as per VDT-I-460135

K3

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 3,9 a
2. Edition

En

Overflow temperature 45° C

supersedes 3.84
company: Fiat
engine: 8045.05.200

VE 4/11 F 1250 L 164

0 460 414 013 DHK: 1 688 904 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	800	3,8-4,2	mm		
1 2 Supply-pump pressure	800	5,1-5,7	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	800	73,5-74,5	cm³/1000 strokes		3,5(4,0)
1 4 Idle regulation	350	21,0-25,0	cm³/1000 strokes		3,5(4,0)
1 5 Full-speed regulation	1350	29,0-35,0	cm³/1000 strokes		
1 6 Start	100	min. 80,0	cm³/1000 strokes		
1 7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

		500	800	1250
2 1 Timing device	n = rev/min mm	1,2-2,0 (0,9-2,1)	(3,3-4,7)	7,6-8,4 (7,3-8,7)
2 2 Supply pump	n = rev/min bar (kgf/cm²)	3,6-4,2		7,0-7,6
Overflow delivery	n = rev/min cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1430	max. 1,0	
	1380	6,0-16,0(6,5-15,5)	
	1350	(27,5-36,5)	
	1250	69,5-72,5(68,3-73,7)	
	800	(71,3-76,7)	
	500	64,0-67,0(62,1-68,9)	
switch-off	1250	0	
Idle stop	500	max. 2,0	
	425	4,0-10,0 (2,5-11,5)	
	350	(18,5-27,5)	
End stop	150	min. 90,0	
	250	max. 65,0	

2 4 Solenoid — max cut-in voltage xxx min. 10 V
test voltage xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	-
KF	5,4-5,6
MS	1,5-1,7
SVS	5,0
A	
B	

Observations

8.84

K4

KY

⑥ **46**

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 MAN 5,6 p1

1. Edition

Testo-ISO 4113

VE6/12 F 1100 R 166-1

0 460 426 040

Overflow temperature 45° C

supersedes MAN
company: D 0226 MT E 51
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

Test Instructions and Test Equipment
see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	700	3,3-3,7	mm		
1.2 Supply-pump pressure	700	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm³/1000 strokes		
Full-load delivery without charge-air pressure	700	90,5-91,5	cm³/1000 strokes		4,0 (4,5)
1.4 Idle regulation	300	13,0-19,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1230	18,0-24,0	cm³/1000 strokes		
1.6 Start	100	min. 80,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	700	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	700	900
	mm	1,5-2,3 (1,2-2,6)	(2,8-4,2)	3,7-4,5 (3,4-4,8)
2.2 Supply pump	n = rev/min	500		1100
	bar (kgf/cm²)	3,3-3,9		5,9-6,5
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1280	max. 1,0	
	1230	(16,0-26,0)	
	1170	70,0-78,0 (69,0-79,0)	
	1100	89,5-92,5 (88,0-94,0)	
	900	91,0-95,0 (90,0-96,0)	
	700	(88,0-94,0)	
	500	91,0-95,0 (89,3-96,7)	
switch-off			
Idle stop	370	max. 1,0	
	330	3,0-9,0 (1,0-11,0)	
	300	(11,0-21,0)	
End stop	350	min. 101	
	450	max. 101	

2.4 Solenoid: max. cut-in voltage xxx min. 10 V; xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-5,9
MS	0,9-1,1
SVS	2,5
A	
B	

Observations

K5

8.84

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2.2 b
2. Edition
En
3.84

Testoil-ISO 4113

VE 4/10 F 2100 L 168
0 460 404 038

Overflow temperature 45° C

supersedes
company: VM Motori
engine: HR 492 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1600	4,5 - 4,9	mm	0,8	
1 2 Supply-pump pressure	1600	5,6 - 6,2	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge-air pressure	1600	59,0 - 60,0	cm³/1000 strokes	0,8	3,0 (3,5)
Full-load delivery without charge-air pressure	1600	37,5 - 40,5	cm³/1000 strokes	0	
1 4 Idle regulation	400	16,0 - 20,0	cm³/1000 strokes	0	2,5 (3,5)
1 5 Full-speed regulation	2300	27,0 - 33,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 55,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	–				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,8 bar	n = rev/min	1000	1600	2100
	mm	0,9-1,7 (0,6-2,0)	(4,0-5,4)	7,0-7,8 (6,7-8,1)
2 2 Supply pump LDA=0,8 bar	n = rev/min	400		2100
	bar (kgf/cm²)	1,5-2,1		7,2-7,8
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2450	2,0 - 8,0 (0,5-9,5)	0,8
			0,8
	2300	(25,5-34,5)	0,8
	2100	51,8-54,2 (48,5-57,5)	0,8
	1600	(36,3-41,7)	0
	1600	(56,8-62,2)	0,8
	* 700	50,0-51,0 (47,1-53,9)	0,4
	600	41,5-42,5 (38,6-45,4)	0
switch-off	2100	0	
Idle stop	600	max. 1,0	
	450	3,5-9,5 (2,0-11,0)	
	400	(13,5-22,5)	
End stop	400	min. 52,0	
	500	max. 46,0	

2 4 Solenoid — max. cut-in voltage xxx min. 10 V
xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2 - 3,4
KF	5,7 - 5,9
MS	0,7 - 0,9
SVS	3,6
A	
B	

Observations

Manifold-pressure compensator stroke = 6,1 mm
Correction at the adjusting nut. (46)

K6

K6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1,7 a

2. Edition

En

Testoil-ISO 4113

VE 4/8 F 2300 R 171

0 460 484 010

DHK: 1 688 901 022/130 bar

Test pressure line
6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

superseded 03.84
company: Peugeot
engine: XUD 7

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1250	3,8- 4,2	mm		
1 2 Supply-pump pressure	1250	4,3- 4,9	bar (kgf/cm²)		
1 3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5	cm³/1000 strokes		2,5(3,0)
1 4 Idle regulation *	A 550	3,5- 4,5	cm³/1000 strokes		B 2,0(3,0)
1 5 Full-speed regulation	2400	19,0-25,0	cm³/1000 strokes		
1 6 Start	100	min. 42,0	cm³/1000 strokes		
1 7 Load-dependent port-closing	1250				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	700	1250	2000
	mm	0,8-1,6(0,5-1,9)	(5,3-4,7)	3,0-8,8(7,7-9,1)
2 2 Supply pump	n = rev/min	700		2000
	bar (kgf/cm²)	2,8-3,4		6,4-7,0
Overflow delivery	n = rev/min			2300
	cm³/10 s			55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2650	max. 7,0	
	2500	11,5-17,5 (10,5-18,5)	
	2400	(18,0-26,0)	
	2250	28,0-30,0 (26,7-31,3)	
	2000	29,0-31,0 (27,7-32,3)	
	1250	(27,7-32,3)	
	700	29,5-32,5 (28,0-34,0=	
switch-off	2300	0	
Idle stop	A 550	3,5 - 4,5	
	B 350	8,0 -12,0 (6,0-14,0)	
	C 470	8,0 -12,0 (6,0-14,0)	
End stop	200	min. 44,0	
	300	max. 34,0	

2 4 Solenoid

max. cut-in voltage xx min 10 V

test voltage ~~xxxxxxxxx~~ rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
SVS	max. 3,0
A	
B	

Observations

Residual delivery setting idle setting (LFG) as per VDT-I-460135

K7

K7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 5,0 f
1. Edition
En

VE 6/11 F 1150 R 172
0 460 416 032

Overflow temperature 45° C

supersedes –
company Steyr
engine WD 611.87

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	800	3,5 - 3,9	mm	0,8	
1 2 Supply-pump pressure	800	5,4 - 6,0	bar (kgf/cm²)	0,8	
1 3 Full-load delivery with charge-air pressure	800	70,0 - 71,0	cm³/1000 strokes	0,8	
Full-load delivery without charge-air pressure	500	53,5 - 54,5	cm³/1000 strokes	0	
1 4 Idle regulation	250	16,0 - 20,0	cm³/1000 strokes	0	
1 5 Full speed regulation	1200	37,0 - 43,0	cm³/1000 strokes	0,8	
1 6 Start	100	min. 80	cm³/1000 strokes	0	
1 7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	600	800	1130
LDA = 0,8 bar	mm	1,4 - 2,2 (1,1-2,5)	(3,0 - 4,4)	6,8-7,6 (6,5-7,9)
2 2 Supply pump	n = rev/min	500		1130
LDA = 0,8 bar	bar (kgf/cm²)	3.8 - 4,4		6,8 - 7,4
Overflow delivery	n = rev/min	500(0 bar)		1150 (0,8 bar)
	cm³/10 s	55-138 (40 - 153)		55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1310	max. 10		0,8
	1250	14,5 - 21,5	(13,5-22,5)	0,8
	1200		(35,5-40,5)	0,8
	1130	71,0 - 74,0	(69,8-75,2)	0,8
	800		(67,8-73,2)	0,8
	* 500	61,5 - 62,5	(58,6-65,4)	0,15
	500		(50,6-57,4)	0
switch-off				
Idle stop	380	max. 1,0		
	330	min. 2,0		
	250		(13,5 - 22,5)	
	170	min. 80		
End stop	250	max. 50		

2 4 Solenoid — max. cut-in voltage / test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	5,2 - 5,5
MS	1,3 - 1,5
SVS	4,0
A	
B	

Observations

*Manifold-pressure compensator stroke = 4,0 mm

K8

K8

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 CUM 5,9 g
1. Edition

VE 6/12F 1400 R173
0 460 426 038
DHK: 1688 901 016

supersedes -
company: Cummins
engine: 6 BT-590

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1100	2,0-2,4	mm	0,75	
1 2 Supply-pump pressure	1100	4,3-4,9	bar (kgf/cm²)	0,75	
1 3 Full-load delivery with charge-air pressure	1100	86,0-87,0	cm³/1000 strokes	0,75	4,0 (4,5)
Full-load delivery without charge-air pressure	500	73,5-74,5	cm³/1000 strokes	0	
1 4 Idle regulation	375	20,0-26,0	cm³/1000 strokes	0	3,5 (4,5)
1 5 Full-speed regulation	1600	31,0-39,0	cm³/1000 strokes	0,75	
1 6 Start	100	min. 97,0	cm³/1000 strokes	0	
1 7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	900		1100		1400
LDA = 0,75 bar	mm	0,4-1,2	(0,1-1,5)	(1,5-2,9)	2,9-3,7	(2,6-4,0)
2 2 Supply pump	n = rev/min	500			1400	
LDA = 0,75 bar	bar (kgf/cm²)	2,0-2,6			5,6-6,2	
Overflow delivery	n = rev/min					
	cm³/10 s					

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1750	max. 1,5		0,75
	1600		(30,0-40,0)	0,75
	1400	79,5-82,5	(78,0-84,0)	0,75
	1250	82,5-85,5	(81,0-87,0)	0,75
	1100		(83,5-89,5)	0,75
	* 750	80,0-81,0	(77,5-83,5)	0,3
	500		(70,3-77,7)	
switch-off				
Idle stop	450	max. 1,5		
	375		(18,0-28,0)	
	300	35,0-43,0	(34,0-44,0)	
End stop	130	min. 97,0		
	200	max. 85,0		

2 4 Solenoid — max. cut-in voltage xx min. 10 Volt
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	-
KF	5,1-5,9
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

Stop check electric shutoff device at 375 min/1. Manifold-pressure compensator stroke = 4,5 mm

8.84

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 I1
1. Edition

En

PES 6 A 80 C 410 RS 2085 EP/RSV 300-900 A 7 B 528
C

supersedes
company Daimler-Benz
engine OM 352
Aggregat - 75 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5-6,0	0,4			
	6	2,2-3,0				
	15	11,5-12,8				
200	6	1,3-2,2				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.49,5	900	16,0	without auxiliary spring		-	-	-	-
	920	9,6	X = 0,5					
	930	4,8						
ca.48 (2a)	900	7,5-8,0	with auxiliary spring					
	920	2,4-3,7	**					
	950	0 - 1.0						

Set idle auxiliary spring so that 2.5 mm control-rod travel is reached at n=920-930 min/1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
880	48,0-50,0 (46,5-51,5)	900	-	-	100	13,2-13,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.84

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 l
3. Edition

En

PES 6 A 80 C 410 RS 2085 D EP/RSV 575-1100 A 7 B 533 DL

Komb.-Nr. 0 400 876 174

supersedes 6.70
company Daimler-Benz
engine OM 352
Mähdrescher - 108 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	9	5,5-6,0	0,4			
	6	2,2-3,0				
	15	11,5-12,8				
200	6	1,3-2,2				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.56,5	1100	12,0	without auxiliary spring. x = 1,0	25	575	5,0	1080	0
	1110	7,0			200	19-21	900	0,1-0,3
	1120	2,4			575	4,7-5,3	650	0,3-0,5
ca.56 (2a)	1100	8,2-9,4	with auxiliary spring **		600	2,8-4,0		
	1130	3,0-4,4			660	0 - 1,0		
	1180	0 - 1,0						

The numbers denote the sequence of the tests

Set idle auxiliary spring so that 3.0 mm control-rod travel is reached at n = 1140 - 1150 min/1.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40°C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	56,0-57,0 (54,5-58,5)	1100	800	52,5-55,5 (51,0-57,0)	100	13,2-13,8 mm RW	575	5,0
			500	48,0-51,0 (46,5-52,5)				

Checking values in brackets

* 1 mm less control-rod travel than ex 2

4.84

K11

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RAB 9,7a 2
En 1. Edition

PES 6 A 95 D 410 RS 2108 RQ 200/1000 AB 647 L

supersedes
company Raba
engine D 2156 HM 6

Komb.-Nr. 0 400 846 270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7-1,8 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	7,5-8,0	0,35(0,6)			
	6,0	3,2-4,2				
200	6,0	0,5-1,4				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
450	15,7-16,3	450	16,0	1000 1040 1080 1100	15,7-16,0 4,0-12,0 0-4,6 0	440	0	100 200 300 340	7,0-8,1 4,6-6,7 0 - 2,6 0	-	-

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation. At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1000	107,5-109,5 (105,5-111,5)		700	104,5-107,5 (102,0-110,0	-	-
			500	108,5-111,5 (106,0-114,0)		

Checking values in brackets

9.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 OMB 7,4 b
2. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 410 RS2494 RQ 275/1300 AB954D (1)
PES 6 A 90 D 410 RS2502 RQV 250-1300 AB961D (2)
Komb.-Nr. 0 400 846 375 (1)
0 400 846 386 (2)

supersedes 5.76
company O M B
engine CP 3 - 130

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0-12,0 mm; Zyl. 6

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1300	14,0+0,1	8,2 - 8,3	0,3(0,45)	12,2+0,1	8,4 - 8,5	
275	8,9-9,1	1,1 - 1,7	0,2(0,4)	9,9-10,1	2,9 - 3,3	n=250 min⁻¹

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

RQ .. 954D

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1050	15,0-15,8	1050	15,4	1320	14,0-15,4	630	0	100	6,4-8,1	700	15,6-15,8
				1390	7,4-12,0			250	5,0-7,9	900	15,4-15,6
				1440	0 - 8,2			400	2,0-4,2		
				1530	0			530	0		

Torque control travel on flyweight assembly dimension a 0,2 mm

Speed regulation Δ 1345 - 1360 = 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp. 40 C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/100 strokes
1	2	3	4	5	6	7
1300	81,5 - 82,5 (79,5 - 84,5)	600	800	78,5 - 81,5 (76,5 - 83,5)	-	-
			500	72,0 - 75,0 (70,0 - 77,0)		
					1455-1465 Control switch	

Checking values in brackets

5.84

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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RQV .. 961 D

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rodtravel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min (5)	Intermediate rated speed: Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min (8)	Lower rated speed: Control rod travel mm (3, 9)	Sliding sleeve travel (1): rev/min (10)	Sliding sleeve travel (1): mm (11)
ca.66	1350	15,0-17,6	-	-	-	ca.21	100	min.11,5	250	1,0-2,0
							250	9,9-10,1	700	4,0-4,5
ca.62	11,3	1340-1350					780-840=2,0		1350	8,2
	4,0	1465-1495								
	1600	0 - 1,0								
						250-700				

Torque control travel a 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	Full load delivery: cm³/1000 strokes (2)	Rotational-speed limitation intermediate speed (2b, 4a): rev/min (3)	Fuel delivery characteristics high idle speed (5a, 5b): rev/min (4)	Fuel delivery characteristics high idle speed: cm³/1000 strokes (5)	Starting fuel delivery idle switching point (6): rev/min (6)	Starting fuel delivery idle switching point: cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Torque-control travel (5): Control rod travel mm (9)
1300	84,0 - 85,0	1340-1350 *	800	82,0 - 85,0	100	112,0-124,0	1300	12,3+0,1
	(82,0 - 87,0)			(80,0 - 87,0)		(109,0-127,0)	1000	12,3+0,1
						= 16,0-16,6	700	12,4+0,1
			500	74,0 - 76,0		mm RW	500	12,5+0,1
				(72,0 - 78,0)	Change-over point			
					100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min (5)	Intermediate rated speed: Control rod travel mm (6)	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min (8)	Lower rated speed: Control rod travel mm (3, 9)	Sliding sleeve travel (1): rev/min (10)	Sliding sleeve travel (1): mm (11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F) (2): rev/min (1)	Full load delivery: cm³/1000 strokes (2)	Rotational-speed limitation intermediate speed (2b, 4a): rev/min (3)	Fuel delivery characteristics high idle speed (5a, 5b): rev/min (4)	Fuel delivery characteristics high idle speed: cm³/1000 strokes (5)	Starting fuel delivery idle switching point (6): rev/min (6)	Starting fuel delivery idle switching point: cm³/1000 strokes (7)	Torque-control travel (5): rev/min (8)	Torque-control travel (5): Control rod travel mm (9)

Checking values in brackets

* 1 mm less control rod travel than col 2

K14

KAY

PE 10 A 90 D 520/5 LS 2515 RQ 250/1250 AB 1170-2R
Komb.-Nr. 0 400 649 228
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes
company MAN
engine D 2530 MF

Tasch:ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	10,3-10,4	0,3(0,45)			
250	7,4-7,6	0,9-1,5	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5 4,0	1295-1310 1365-1395	250	6,0	100 250 360-400 500	min. 7,5 5,9-6,1 = 2,0 max. 1,0	1250 600 870 970	11,5-11,6 12,1-12,2 11,9-12,1 11,5-11,8

Torque-control travel on flyweight assembly dimension a = 0,30 mm

Speed regulation at 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	102,5-103,5 (100,5-105,5)	-	800	95,5-98,5 (93,5-100,5)	100	133,0-143,0 (130,0-146,0)
			500	90,0-94,0 (88,0-96,0)	250	6,5 mm RW

Checking values in brackets

7.84

K15

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 8
3. Edition
En

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2163 L
Komb.-Nr. 0 400 864 055 A 8 C 2163 L

superseded 9.83
company KHD
engine F 4 L 913
55 kW (75 PS)
bei 2300 min^{-1}
Schlepper DX 80
Identification S 16

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	9,1-9,3	1,5 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	325	8,7	1150	11,3+0,1
	x = 1,5						100	min.19,0	500	12,1+0,1
							325	9,1-9,3	800	11,8+0,2
(5) ca.55	10,3	1190-1200					470-530	= 2,0	900	11,6+0,2
	4,0	1245-1275								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	68,0-69,0 (66,0-71,0)	1190-1200*	300	65,0-67,0 (63,0-69,0)	-	-	-	-
			500	58,0-61,0 (55,5-63,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

5.84

K16

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

KAG

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 3,9 c
5. Edition
En

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R
A 1 C 2153 R

supersedes 5.84
company Eicher
engine EDL 4-2
65 kW (88 PS)

1 - 2 - 4 - 3 je 90° ± 0,5° (± 0,75°)

Komb.-Nr. 0 400 874 233

Test to ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1025	12,6+0,1	8,1 - 8,2	0,2(0,45			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 16	300	10,5	1025	12,6+0,1
	x =	2,25							500	13,2+0,1
							300	10,9-11,1	895	12,9+0,2
ca. 46 (5)	11,6	1065-1075					400-460	=2,0		
	4,0	1095-1125								
	1260	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750	83,5-86,5 (81,5-88,5)	100	19,5-21,0 mm RW	-	-
			500	77,0-79,0 (75,0-81,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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K17

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 13,8 a

2. Edition

En

PE 12 A 90 D 521 RS 2648 RQV 325-1500 AB 1164 R

supersedes 5.84

Komb.-Nr. 0 400 650 002

company Baudouin

engine DF 12 AN, S 308 kW

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Start of delivery marking, mark cylinder 1 at 24° on the timing device.

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,6-9,7	6,2-6,3	0,3(0,45			
325	6,0-6,2	1,1-1,7	0,25(0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 13	100	min.7,5	300	0,9-1,0
							325	6,0-6,2	700	3,1-3,2
ca. 46	8,6	1540-1550					355-415	=2,0	1100	5,1-5,2
	4,0	1595-1625					500	max.1,0	1500	8,4
	1700	0-1,9								
						345-46 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1500	61,5-62,5 (59,5-64,5)	1540-1550*	-	-	100	113,0-123,0 (110,0-126,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

K18

K18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 EIC 3,9 g 1
4. Edition
En

PES 6 A 80 D 320 RS 2652 RSV 300-1150 A 0 B 2001-2 R
A 0 C 2001-2 R
Komb.-Nr. 0 400 876 317

supersedes 5.84
company Eicher
engine EDL 6-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1150	12,0+0,1	7,8 - 7,9	0,25(0,4)			
300	8,3-8,5	2,0 - 3,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,75	-	-	-	ca. 25	300	7,9	-	-
							100	min. 19,5		
							300	8,3 - 8,5		
ca. 49 (2a)	11,0	1190-1200					450-510	= 2,0		
	4,0	1285-1315								
	1430	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	77,5-78,5 (76,0-80,0)	1190-1200*	600	71,0-73,0 (69,0-75,0)	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.84

Test Specifications Fuel Injection Pumps ① and Governors

WPF 001/4 FOR 6,6 a
1. Edition

En

PES 6 A 95 D 410 RS 2688 RQV 350-1400 AB 1202 L supersedes
Komb.-Nr. 9 400 085 231 compar Ford
engine 6,6 L NA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,15-3,25 (3,10-3,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	7,1-7,3	0,35 (0,6)			
350	6,4-6,5	0,7-1,1	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1430	15,2-17,8	-	-	-	ca. 16	100	min. 9,0	350	1,8-2,1
							350	6,4-6,6	500	3,1-3,5
ca. 63	9,1	1440-1450					720-780	= 2,0	1000	5,4-5,7
	4,0	1530-1560							1430	8,5
	1680	0 - 1,0				320-480 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	70,5-72,5 (68,5-74,5)	1440-1450*	500	50,5-53,5 (48,0-56,0)	100	112,0-122,0 = 19,0-21,0 mm RW	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

K20

K20

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 LIE 8,4 a

1. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L
Komb.-Nr. 0 400 876 322

supersedes –
company Liebherr
engine D 906 NA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.23	400	5,7	1000	9,7-9,8
	x =	2,5					400	6,1-6,3	550	9,7-9,9
							455-515	=2,0	430	10,9-11,5
ca. 50 (2a)	8,7	1040-1050								
	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	81,0-83,0 (79,0-85,0)	1040-1050*	600	68,5-71,5 (66,0-74,0)	100	125,0-135,0 (122,0-138,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K21

PES 4 M 55 C 320 RS 60 EP/MN 60 M 46 DR (1)
EP/MN 60 M 42 DR (2)
EP/MN 60 M 51 DR (3)
EP/MN 60 M 43 DR (4)

supersedes 11.76
company Daimler Benz
engine OM 616
(1/3-PKW)
(2/4-Transporter)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) / max. RW

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,7	3,9 - 4,1	0,2(0,25			
	(+0,1)					
250	9,0-9,2	0,4 - 1,0	0,15(0,2			
1600	Sect.C, col. 4-6		0,25(0,3			
1000						

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,1+0,1	500-480	10	520	13,7	580	9,2-13,7	675	9,2-10,2	150	14,8-14,9
					615	6,2-10,7	850	7,7- 8,7	250	14,4-14,8
			550-	580*	675	3,2- 7,2			350	13,9-14,3
									520	13,7-13,8

control rod travel test (cols. 4-11)
* rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat col	Control road travel from full-load to idle: mm cm³/1000 strokes 8
2250	520	39,7 - 40,7 (38,7 - 41,1)	1600	360	38,9 - 40,5 (37,9 - 41,5)	500	600	3,2 - 4,2
			1000	140	38,2 - 39,7 (37,2 - 40,7)	250	ca. 880	4,5 -10,5

Checking values in brackets

8.77

K22

Test Specifications Fuel Injection Pumps and Governors (1A)

WPF C01/4 MB 2,4 t
1. Edition
En

Test data

PES 4 M 55 C 320 RS 106
RSV 350 - 1650 MOC 350
Komb.- 0 400 074 079

Sales model
0 400 074 080

supersedes
company Daimler Benz
engine OM 616
46 kW

1 - 3 - 4 - 2 = 0 - 90 - 180 - 270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70 - 1,80 (1,65 - 1,85) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1630	13,3±0,1	4,0 - 4,1	0,2 (0,3)			
350	6,1 - 6,3	0,6 - 0,8	0,1 (0,15)			
750	13,3 + 0,1		0,25 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel min rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3- 1,0				ca. 40	350	6,2		
ca. 75 (2a)	12,4 =1670-1680 4,0 =1770-1790 0,3-1,7=2000									

The numbers denote the sequence of the tests* Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp. 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1630	40,0 - 41,0 (39,0 - 42,0)	1670-1680 *	750	36,5 - 38,5 (35,5 - 39,5)	100	RW = 20,3 min. 53,0		
					350	6,0 - 8,0 (5,5 - 9,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 MB 2,4 K 2
2. Edition

En

Testcard 41[illegible]

PES 4 M 55 C 320 RS 106 RSV 400-2200 MOC 351
Komb. 0 400 074 082 0 400 074 081
1-3-4-2 = 0-90-180-270 ± 0,50 (0,75) Sales model

supersedes -
company Daimler-Benz
engine OM 616
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min 1	Control rod travel mm 2 (2)	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
2180	12,9+0,1	4,0-4,1	0,2(0,3)			
400	6,4-6,6	0,6-0,8	0,1(0,15)			
1000	13,4+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.39	400	6,5	1000	13,4-13,5
--									1750	13,1-13,4
*ca.70 (2a)	12,0 =2240-2250 4,0 = 2370-2390 0,3-1,7= 2550									

The numbers denote the sequence of the test. * Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp. 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat. Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	(5) Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
2180	40,0-41,0 (39,0-42,0)	2240-2250*	1000	37,0-38,0 (36,0-39,0)	1000	RW = 20,3 min. 53		
					400	6,0-8,0 (5,5-9,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

K24

(1A)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 8,8 a

4. Edition

En

Testoil-ISO 4113

PE 6 A 100 D 320 RS 3008	EP/RSV 300-1150 A1B489DR A1C489 DR	supersedes	4.84
PE 8 A 100.. RS 3009	EP/RSV 300-1150 A1B489DR A1C489 DR	company	M W M
	RQV 300/550-750 AB 660 R, 871 R	engine	D/TD 232 - 6 D/TD 232 - 8

Instructions P. 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 - 13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

EP/RSV .. 489DR

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.66	1150	16,0	Without auxiliary spring			ca.28	300	6,0	See	note
	1200	11,4					100	19 - 21		
	1250	5,8					300	5,7-6,3		
(5)	1230	6,0-9,3					350	3,5-4,7		
	1280	1,8-4,0					400	0,6-3,0		
	1400	0,3- 1					500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
Instructions 4 - 14					100	19,5-21,5 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

L1

B. Governor Settings

RQV .. 660R, 871R**

(1A)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	750	14,8-17,8	ca.34	520	13,7-15,5	ca.10	250	6,8-8,0		
	770	9,0-14,0		600	8,5-10,0		300	4,5-7,0		
	790	3,5-10,5		650	4,5-7,0		350	3,6-4,0		
	800	0 - 8		720	0		550	1,8-4,0		
	840	0					630	0		
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational speed limital	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
Instructions 4 - 14					100	15,7-16,3 mm RW		
			(6a)		300	5,3-5,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full load stop		(6) Rotational speed limital	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

L2

** Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at MWM 1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

(2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2

(3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5

(6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:
1 - 6 - 3 - 2 - 5 - 4
0 -90 -120-210-240-330°

PE 8 A:
1 - 8 - 5 - 4 - 7 - 2 - 3 - 6
0 -30 -90 -120-180-210-270-300°

L3

L3

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 165 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5 - 85,5				
B'162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5 - 85,5				
B 162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270						
F 160 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5 - 85,5				
B'155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5 - 85,5				
B 155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170						
A 141 PS / 2300 min^{-1}								
1185	76,0-78,0	1200						
B'144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5 - 85,5				
B 144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060						
A 131 PS / 2100 min^{-1}								
1080	73,0-75,0	1090						
F 144 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5 - 85,5				
B'138 PS / 2000 min^{-1}								
1000	77.0-79,0	1010	750	82,5 - 85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 138 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 126 PS / 2000 min^{-1}								
1030	73,0-75,0	1040						
B 127 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A'115 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 115 PS / 1800 min^{-1}								
930	74,0-76,0	940						
B 108 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A' 98 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 98 PS / 1500 min^{-1}								
775	76,0-78,0	785						
B 162 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 143 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 130 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 120 PS / 1500 min^{-1}

750 90,0-92,0 760

Emergency power output

C 109 PS / 1500 min^{-1}

750 90,0-92,0 760

Emergency power output

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 220 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5 - 85,5				
B'216 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5 - 85,5				
B 216 PS / 2500 min^{-1}								
1250	81,0-83,0	1270						
F 213 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5 - 85,5				
B'206 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5 - 85,5				
B 206 PS / 2300 min^{-1}								
1150	80,0-82,0	1170						
A 188 PS / 2300 min^{-1}								
1185	76,0-78,0	1200						
B'192 PS / 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5-85,5				
B 192 PS / 2100 min^{-1}								
1050	77,0-79,0	1060						
A 175 PS / 2100 min^{-1}								
1080	73,0-75,0	1090						
F 192 PS / 2000 min^{-1}								
1030	77,0-79,0	1040	750	82,5 - 85,5				
B'184 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5 - 85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 184 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 168 PS / 2000 min^{-1}								
1000	73,0-75,0	1010						
B 169 PS / 1800 min^{-1}								
930	78,0-80,0	940						
A '154 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 154 PS / 1800 min^{-1}								
900	74,0-76,0	910						
B 144 PS / 1500 min^{-1}								
775	80,0-82,0	785						
A'130 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 130 PS / 1500 min^{-1}								
750	76,0-78,0	760						
B 216 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 190 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 173 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

(1)

Testoil-ISO 4113

Checking values in brackets

• 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
D 160 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								
C 145 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 210 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B' 207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B 207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170						
A 188 PS / 2300 min^{-1}								
1185	101,0-103,0	1200						
B'192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060	800	105,5-107,5				
B 192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060						
A 174 PS / 2100 min^{-1}								
1080	99,0-101,0	1090						
F 192 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B'184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B 184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010						
A 167 PS / 2000 min^{-1}								
1030	98,0-100,0	1040						
B 168 PS / 1800 min^{-1}								
900	101,0-103,0	910						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A' 153 PS / 1800 min^{-1}								
900	101,0-103,0	910						
A 153 PS / 1800 min^{-1}								
930	97,0-99,0	940						
B 142 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A'129 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A 129 PS / 1500 min^{-1}								
775	96,0-98,0	785						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B'292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270						
F 280 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B'275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B 275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170						
A 250 PS / 2300 min^{-1}								
1185	96,0-98,0	1200						
B'255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060	800	100,5-103,5				
B 255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060						
A 232 PS / 2100 min^{-1}								
1080	95,0-97,0	1060						
F 256 PS / 2100 min^{-1}								
1000	99,0-101,0	1010	800	100,5-103,5				
B'245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010	800	100,5-103,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010						
A 222 PS / 2000 min^{-1}								
1030	95,0-97,0	1040						
B 224 PS / 1800 min^{-1}								
900	99,0-101,0	910						
A'203 PS / 1800 min^{-1}								
900	99,0-101,0	910						
A 203 PS / 1800 min^{-1}								
930	95,0-97,0	940						
B 189 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A'172 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A 172 PS / 1500 min^{-1}								
750	94,0-96,0	760						
D 250 PS / 1800 min^{-1}								
900	111,0-113,0	910						
Emergency power output								
C 227 PS / 1800 min^{-1}								
900	111,0-113,0	910						
Emergency power output								
D 210 PS / 1500 min^{-1}								
750	111,0-113,0	760						
Emergency power output								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
C 191 PS / 1500 min^{-1}								
750	111,0-113,0						760	

(1)

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 u

1. Edition

En

Test-No. 4112

PES 4 M 55 C 320 RS 106-1
RSV 350-1650 MOC 350

supersedes

company Daimler Benz

engine OM 616
46 kW

Komb. 0 400 074 083 Sales model 0 400 074 084

1-3-4-2=0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) RW=20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery . cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1630	12,5+0,1	3,7-3,8	0,2(0,3)			
350	6,1-6,3	0,6-0,8	0,1(0,15)			
750	12,4+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 40	350	6,2		
* ca.76	11,5	1670-1680						
(2a)	4,0	1745-1775						
	0,3-1,7	2000						

The numbers denote the sequence of the test * Adjustment angle = 0° = horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	750	33,5-34,5 (32,5-35,5)	100	RW=20,3 min.53,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L15

L15

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 2,4 u1
1. Edition
En

PES 4 M 55 C 320 RS 106-1
RSV 400-2200 MOC 351
Komb. 0 400 074 086 Sales model 0 400 074 085
1-3-4-2=0-90-180-270 ± 0,50 (0,75)

supersedes -
company Daimler Benz
engine OM 616
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) RW 20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2180	11,9+0,1	3,55-3,65	0,2(0,3)			
400	6,4-6,6	0,6-0,8	0,1(1,5)			
1550	12,5+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca. 40	400	6,5	1550 1750 1950	12,5+0,1 12,1+0,2 11,9+0,2
ca.72 (2a)	11,0 = 2240-2250 4,0 = 2355-2385 0,3-1,7= 2550							

The numbers denote the sequence of the tests* Adjustment angle = 0° horizontal control lever position.

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note. changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
2180	35,5-36,5 (34,5-37,5)	2240-2250*	1550	36,0-37,0 (35,0-38,0)	100	RW=20,3 min. 53,0		
					400	6,0-8,0 (5,5-9,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L16

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 3,0 V

2. Edition

En

PES 5 M 55 C 320 RS 109-1 RSV 350-1650 MOC 350-1
Komb.-Nr. 0 400 075 007
0 400 075 006 Sales model
1- 2- 4 - 5 - 3
0-72-144-216-288 ± 0,50 (0,75)

supersedes 1.84
company Daimler-Benz
engine OM 617
57 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) RW = 20,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1630	12,5+0,1	3,7-3,8	0,2(0,3)			
350	6,2-6,5	0,6-0,8	0,1(0,15)			
1150	13,2+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 40	350	6,2-6,5	1150 1400 1630	13,2-13,3 12,6-12,8 12,5-12,6
*ca.75° (2a)	1670-1680 = 11,6 1770-1800 = 4,0 2000 = 0,3-1,7									

* Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

* Adjustment angle = 0° = horizontal control lever positi

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	750	36,5-37,5 (35,5-38,5)	100 350	min. 53,0 6,0-8,0 (5,5-9,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

L17

L17

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 VOL 6,0 t

1. Edition

En

Test oil ISO 4113

PES 6 MW 100/320 RS 1004
RSV 325-1050 MW 4/308-1

0 403 476 020

supersedes
company Volvo
engine TD 60 D
112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1020	10,8+0,1	8,65-8,85	0,35(0,6)			
325	4,9-5,0	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.26	325	4,3	350	11,2-11,3
							325	4,9-5,0	500	10,8-10,9
							450-510=2,0		1050	10,8-10,9
ca. 63 (2a)	9,8	1090-1100								
	4,0	1130-1160								
	0,3-1,7	1300								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1020	86,5-88,5 (84,5-90,5)	1090-1100*			325	10,0-14,0 (7,5-16,5)	325	4,9-5,0
					100	min.140 (137)		

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

L18

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 8,1 c 2
5. Edition
En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1012
RQV 300-1100 MW 19
Komb. 0 403 446 114

supersedes 5.82
company Fiat
engine 8365.25.500

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	$11,5^{+0,1}$	9,6 - 9,8	),35(0,6)			
300	6,3-6,4	1,15 - 1,55	),35(0,5[illegible])			
700	12,4-12,5		),5 (0,7)			
500	11,2-11,3		),35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8				ca.14	100	min.8,0		
	1300	0 - 1,0					300	6,3-6,4		
							385-445	= 2,0		
ca.49	10,5	1140-1150				③a				
	4,0	1185-1215								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar			700	12,4+0,1
1100	96,0 - 98,0	1140-1150*	700	101,0-105,0	100	min. 160,0	1000	11,5+0,1
	(94,0 - 100,0)			(99,0-107,0)	300	11,5-15,5		
						(9,0-18,0)		
			LDA	0 bar				
			500	75,0- 77,0				
				(73,0- 78,0)		100-230 (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

L19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

FIA 8,1 c 2

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1012 with MW 19	0,5		12,4 - 12,5
		0,3	12,1 - 12,2
		0,2	11,5 - 11,7
		0	11,2 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8k2
7. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016
RQV 300 - 1300 MW 25-1
Komb. 0 403 446 122
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 10.83
company RVI
engine MIDR06.02-12
125 kW (170 PS)

★Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5(0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0				ca. 12	200 300	max. 4,8 6,2-6,3		
ca.62	10,1 4,0	1440-1450 1550-1580				(3a)	490-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1440-1450*	LDA 900	0,5 bar 88,5-92,5 (86,5-94,5)	100	94,0-104,0 (91,0-107,0)		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.84

L21

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L2A

D. Adjustment Test for Manifold Pressure Compensator

Test at n 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
RS 1016 +	0,25		10,8 - 10,9
MW 25-1		0,5	11,1 - 11,2
		0,2	10,3 - 10,4
		0	10,1 - 10,2

Notes

(1) when n rev/min and gauge pressure bar (maximum full-load control rod travel)

L22

L22

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 f
1. Edition
En

Test oil ISO 4113

PES 4 MW 100/320 RS 1102 RQV 300-1100 MW 39-4
0 403 444 106

supersedes
compar Volvo
engine D 45
82,5 kW

1-3 - 4 - 2
0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,2+0,1	9,4-9,6	0,35 (0,6)			
300	4,9-5,0	1,3-1,7	0,35 (0,55)			
1000	10,2+0,1		0,55 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200 1350	15,2-17,8 0 - 1,0				ca.12	300 100	4,9-5,0 min. 8,1		
ca. 48	9,2 4,0	1140-1150 1190-1220				(3a)	320-650			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	94,0-96,0 (92,0-96,0)	1140-1150*	1000	96,5-99,5 (95,0-101,0)	100	19,0-21,0 mm RW 130,0-140,0 (127,0-143,0)		
					300	13,0-17,0 (10,5-19,5)		
					100-220 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

7.84

L23

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